

Falls at low water on Little Qualicum River
about three miles below Cameron lake.

DOMINION WATER POWER BRANCH
DEPARTMENT OF THE INTERIOR
OTTAWA, CANADA.

WATER RESOURCES PAPER No. 14

R E P O R T

OF THE

BRITISH COLUMBIA HYDROGRAPHIC SURVEY

FOR

THE CALENDAR YEAR 1914

BY

R. G. SWAN, B.A. Sc.

Chief Engineer

Prepared under the direction of the Superintendent of Water Powers.



OTTAWA

PRINTED BY J. DE L. TACHÉ, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY

1915

*To Field Marshal His Royal Highness Prince Arthur William Patrick Albert,
Duke of Connaught and of Strathearn, K.G., K.T., K.P., etc., etc., etc.,
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR ROYAL HIGHNESS:

The undersigned has the honour to lay before Your Royal Highness the British Columbia Hydrographic Survey Report for 1914.

Respectfully submitted,

W. J. ROCHE,
Minister of the Interior.

OTTAWA, May 1, 1915.

DEPARTMENT OF THE INTERIOR,

OTTAWA, May 1, 1915.

The Honourable W. J. ROCHE, M.D.
Minister of the Interior.

SIR,—I have the honour to submit the British Columbia Hydrographic Survey Report for 1914, and to recommend that it be published as Water Resources Paper No. 14 of the Dominion Water Power Branch.

I have the honour to be, sir,
Your obedient servant,

W. W. CORY,
Deputy Minister of the Interior.

DEPARTMENT OF THE INTERIOR, WATER POWER BRANCH,

OTTAWA, May 1, 1915.

W. W. CORY, Esq., C.M.G.,

Deputy Minister of the Interior,

SIR,—I have the honour to submit the attached report by R. G. Swan, B. A.Sc., Chief Engineer of the British Columbia Hydrographic Survey.

In view of its important bearing on the industrial development of southern British Columbia, I would recommend that it be published as Water Resources Paper No. 14 of the Dominion Water Power Branch.

Respectfully submitted,

J. B. CHALLIES,

Superintendent, Dominion Water Power Branch.

OTTAWA, May 1, 1915.

J. B. CHALLIES, Esq.,
Superintendent,
Dominion Water Power Branch,
Department of the Interior,
Ottawa.

SIR,—I have the honour to transmit herewith my Annual Report of the British Columbia Hydrographic Survey for the calendar year 1914, together with the reports of engineers in charge of divisions.

Your obedient servant,

R. G. SWAN,
Chief Engineer.

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MAP.

Southern British Columbia, showing gauging stations..... Inside back cover.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER I
REPORT OF R. G. SWAN, B.A.Sc.
Chief Engineer.

CHAPTER I.

REPORT OF THE CHIEF ENGINEER.

SCOPE OF WORK.

The study of water supply may be said to be carried on for three purposes, viz.: Irrigation, Domestic and Municipal Water Supply, and Water-power development. The agricultural development of the semi-arid sections of the province is dependent on the amount of water available. The rapid settlement of the province, due to new railroad lines, demands a close study of both the quality and quantity of the water supply, for the progress of any industrial centre is practically dependent on the cost of power available for its manufactures and benefits and conveniences for its residents. The variation in the run-off from year to year necessitates a close study of stream flow for a number of years before any estimate can be made of the annual discharge of any stream. In connection with many undertakings, costly mistakes have been made owing to the fact that a careful study of the stream flow was not made before commencing construction operations.

The hydrographic work in British Columbia covers fairly well the southern half of the province, the stations being established on the rivers which are considered of the most importance, and of which the flow is likely to be utilized in the near future.

In the Railway Belt we have co-operated with the Dominion Lands Branch, reporting on all engineering works in connection with irrigation and drainage projects, foreshore applications for leases in connection with quarrying, the removal of sand and gravel, marine docks, and elevators. Numerous surveys have also been made for the setting aside of Dominion lands for the protection of municipal water supply.

The Conservation Commission of Canada has been furnished with all the hydrographic data required in its forthcoming report on British Columbia water-powers. The furnishing of this data has involved a very considerable amount of extra work, not only in having additional copies of the data made available in the form desired by the Commission, but also in having the various field officers of the survey carry on work incident to the particular requirements of the Commission.

The co-operation between the Provincial Water Rights Branch and this Survey has been extensive and of mutual value. The provincial engineers have rendered every reasonable assistance to the engineers of this survey. Many valuable suggestions as to organization and scope of work have been received from the Comptroller of Water Rights, Mr. William Young, and have been incorporated in our work.

No small amount of time has been given by the chief engineer and the various divisional engineers to free consultation in connection with hydrographic questions that have arisen throughout the province. It is felt that this work, requiring as it does the exercise of much patience and tact, has given permanent satisfaction to the interested portion of the public.

ORGANIZATION.

DIVISION OF WORK.

Mention was made in my report for 1913 of the establishment of divisional officers with a view to facilitating the work as much as possible. The section of the province covered by the survey in 1914 was divided into three divisions,

namely, Coast, Kamloops, and Nelson. In establishing divisional officers at Vancouver, Kamloops, and Nelson, the most central points were chosen for the successful working of each division. A glance at the accompanying map will give a better idea than can be given in a general description of the areas covered by each division. In the past the most expensive feature of field work in British Columbia has been that of transportation. In an endeavour to overcome this, each division was again divided into three districts, the work in the districts being in charge of district hydrographers who remain in the field for practically the entire season, thus economizing in time and transportation expenditures.

COAST DIVISION.

C. G. Cline, Division Engineer.

The three districts comprising the Coast division are the Southern, the Vancouver Island, and the Lillooet. A general description of each district will be found on pages 19 to 23 of the division engineer's report.

The Southern district has been in charge of C. G. Cline, B.A.Sc.

The Vancouver Island district has been in charge of C. E. Webb, B.A.Sc.

The Lillooet district has been in charge of H. C. Hughes, B.Sc.

Practically all the stations in the Southern district were established under the organization of the Railway Belt Hydrographic Survey, and are consequently fairly well rated. For this reason, Mr. Cline has had sufficient time to generally supervise the work of the other two districts.

Owing to the fact that the Vancouver Island and Lillooet districts comprise new territory, a great deal of work in the establishment of gauging stations has been necessitated. To relieve this pressing work, Mr. Cotton has assisted Mr. Webb and Mr. Hughes until the latter part of August. By this time the work was well established, and Mr. Cotton having volunteered for active service it was not necessary to fill the vacancy so caused.

The computations for the stations of each district have been made by the engineer in charge of the field work of that district and checked by the division engineer.

COAST DIVISION.—List of Regular Gauging Stations.

SOUTHERN DISTRICT.

| Station Number. | Name. | Location. |
|-----------------|----------------------|-------------------------------------|
| 1000 | Belnap creek | Tp. 6, R. 7, W. 7 M. |
| *1063 | Black creek | Near Howe sound |
| 1063 | Belnap creek | Tp. 7, R. 7, W. 7 M. |
| 1001 | Boulder creek | Tp. 3, R. 27, W. 6 M. |
| 1002 | Brandt creek | Tp. 7, R. 7, W. 7 M. |
| 1021 | Brandt creek | Tp. 7, R. 7, W. 7 M. |
| 1023 | Capilano creek | Near North Vancouver |
| 1003 | Chehalis river | Tp. 4, R. 30, W. 6 M. |
| 1004 | Chilliwack river | Tp. 23, E. C. M. |
| 1005 | Coquihalla river | Tp. 5, R. 26, W. 6 M. |
| 1007 | Fraser river | Tp. 5, R. 26, W. 6 M. |
| 1009 | Hixon creek | Tp. 6, R. 7, W. 7 M. |
| 1064 | Hixon creek | Tp. 6, R. 7, W. 7 M. |
| 1010 | Jones creek | Tp. 3, R. 27, W. 6 M. |
| 1046 | Lynn creek | Near North Vancouver |
| 1011 | Mesliloet river | Tp. 7, R. 7, W. 7 M. |
| 1058 | Nicolium river | Tp. 4, R. 5, W. 6 M. |
| 1013 | Norton creek | Tp. 7, R. 7, W. 7 M. |
| 1022 | Seymour creek | Near North Vancouver |
| 1017 | Silver-Pitt creek | Tp. 4, R. 5, W. 7 M. |
| 1033 | Stollicum river | Tp. 5, R. 28, W. 6 M. |
| 1018 | South Lillooet river | Tp. 12, E. C. M. |
| *1065 | Skagit river | 4 miles from international boundary |
| 1056 | Sumallo river | Near Railway Belt boundary |
| 1057 | Sumallo river | Tp. 3, R. 24, W. 6 M. |
| 1020 | Young creek | Tp. 7, R. 7, W. 7 M. |

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

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COAST DIVISION.—List of Regular Gauging Stations.

VANCOUVER ISLAND DISTRICT.

| Station Number. | Name. | Location. |
|-----------------|-----------------------|---|
| 1032 | Big Qualicum river | One and one-half miles from mouth. Prov. Water Dist. 1. |
| 1042 | Campbell river | At Campbell lake |
| 1027 | Chemainus river | One mile from mouth near Chemainus |
| 1054 | Cowichan river | At Cowichan lake |
| 1030 | Englishman river | One and one-half miles from mouth, near Parksville |
| 1029 | Haslam creek | Two miles from mouth, near Ladysmith |
| 1026 | Koksilah river | Two miles from mouth |
| 1051 | Little Qualicum river | At Cameron lake |
| 1028 | Nanaimo river | Six miles from mouth |
| 1040 | Oyster river | One mile from mouth |
| 1036 | Puntledge river | One mile from mouth, near Courtenay |
| 1063 | Puntledge river | Diversion dam above Canadian Collieries power plant. |
| 1025 | Shawnigan creek | At Shawnigan lake, Koenigs |
| 1051 | Sproat river | At Sproat lake |
| 1052 | Stamp river | At Great Central lake |
| *1053 | Stamp river | One-half mile above Stamp falls. |
| 1039 | Tsolum river | Three miles from mouth, near Courtenay |

NOTE.—Stations marked with an asterisk (*) have been only recently established and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded and run-off data will be returned in the report for 1915.

COAST DIVISION.—List of Regular Gauging Stations.

LILLOOET DISTRICT.

| Station Number. | Stream. | Location. |
|-----------------|-----------------|--------------------------|
| 1045 | Bridge river | Thirty miles from mouth |
| 1048 | Cayuse creek | Above Seton creek |
| 1034 | Cheakamus river | One mile above mouth |
| 1047 | Fountain creek | Above irrigation ditches |
| 1035 | Green river | Above Nairn falls |
| 1041 | Green river | Below Green lake |
| 1050 | Laluwinn creek | Above irrigation ditches |
| 1038 | Lillooet river | Six miles above Lillooet |
| 1043 | Riley creek | Above irrigation ditches |
| 1049 | Seton creek | Below Seton lake |
| 1061 | Six Mile creek | Near Mouth |
| 1037 | Soo river | One mile from mouth |
| 1044 | Texas creek | One mile from mouth |

COAST DIVISION.—List of Miscellaneous Gauging Stations.

SOUTHERN DISTRICT.

| Name. | Location. |
|------------|----------------------------|
| Trout—East | Hastings township |
| Trout—West | Hastings township |
| Windermere | Bidwell bay, Burnird inlet |
| Capilano | Intake from Capilano creek |

VANCOUVER ISLAND.

| | |
|-------|-------------|
| Ash | Mouth |
| Sooke | Sooke inlet |

KAMLOOPS DIVISION.

E. M. Dann, Divisional Engineer.

The three districts comprising the Kamloops division are the Kamloops, the Okanagan, and the Ashcroft. A general description of each district will be found on pages 35 and 36 of the division engineer's report.

Kamloops district has been in charge of E. H. Tredcroft, C.E.

Okanagan district has been in charge of K. G. Chisholm, B.Sc.

Ashcroft district has been in charge of C. B. Corbould, B.A.Sc.

The transportation facilities in this division are much better than in the Coast and Nelson divisions, and Mr. Dann has availed himself of these facilities to assist and supervise the establishment of new stations in the extension of this work.

The computations for the stations of each district have been made by the engineer in charge of the field work of that district, and checked by the division engineer.

KAMLOOPS DIVISION.—List of Regular Gauging Stations.

KAMLOOPS DISTRICT.

| Station Number. | Name. | Location. |
|-----------------|--|--|
| 2002..... | Bolean creek..... | Tp. 18, R. 12, W. 6 M..... Prov. Water Dist. 2. |
| *2068..... | Boulder creek..... | Near Chu Chua..... " " " |
| 2004..... | Campbell creek..... | Tp. 19, R. 16, W. 6 M..... " " " |
| 2057..... | Canyon creek..... | Tp. 21, R. 15, W. 6 M..... " " " |
| 2047..... | Clearwater river..... | Near Raft river..... " " " |
| 2056..... | Little Clearwater river..... | Near Raft river..... " " " |
| 2005..... | Cherry creek..... | Tp. 19, R. 19, W. 6 M..... " " " |
| 2011..... | Essell creek..... | Tp. 17, R. 14, W. 6 M..... " " " |
| *2067..... | Fishtrap creek..... | Near Barriere..... " " " |
| 2014..... | Guichon creek..... | Near Mamit lake..... " " 3 |
| 2019..... | Hefley creek, (below Hefley lake)..... | Tp. 22, R. 16, W. 6 M..... " " 2 |
| 2018..... | Hefley creek (Lower)..... | Tp. 22, R. 17, W. 6 M..... " " " |
| 2020..... | Ingram creek..... | Tp. 17, R. 13, W. 6 M..... " " " |
| 2022..... | Jamieson creek..... | Tp. 22, R. 17, W. 6 M..... " " " |
| 2023..... | Louis creek..... | Tp. 23, R. 15, W. 6 M..... " " " |
| 2026..... | Monte creek (Division to Summit lake)..... | Tp. 18, R. 14, W. 6 M..... " " " |
| 2025..... | Monte creek (below Division to Summit lake)..... | Tp. 13, R. 14, W. 6 M..... " " " |
| 2024..... | Monte creek (above Bostock diversion)..... | Tp. 19, R. 15, W. 6 M..... " " " |
| *2069..... | Myrtle river..... | Near Raft river..... " " " |
| 2032..... | Paul creek (below Paul lake)..... | Tp. 20, R. 16, W. 6 M..... " " " |
| 2055..... | Raft river..... | Near Raft river..... " " " |
| 2058..... | Siwash creek..... | Tp. 22, R. 16, W. 6 M..... " " " |
| 2040..... | Thompson river (Kamloops)..... | Tp. 20, R. 17, W. 6 M..... " " " |
| *2041..... | N. Thompson river (above Jamieson creek)..... | Tp. 22, R. 17, W. 6 M..... " " " |
| *2059..... | N. Thompson river (above Clearwater river)..... | Near C.N.R. Mile 71 north of Kamloops..... " " " |
| 2043..... | Tranquille river..... | Tp. 20, R. 19, W. 6 M..... " " " |
| *2066..... | Whitewood river..... | Near Barriere..... " " " |

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

*Owing to certain discrepancies between the results found on the two North Thompson river stations, the data for 1914 on both these stations is withheld until the difficulties can be adjusted in the open season.

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KAMLOOPS DIVISION.—List of Regular Gauging Stations—*Con.*

OKANAGAN DISTRICT.

| Station Number. | Name. | Location. | |
|-----------------|----------------------------------|------------------------|----------------------|
| 2090 | Adams river | Tp. 23, R. 12, W. 6 M. | Prov. Water Dist. 2. |
| 2065 | Ashnola creek | Near Ashnola | " " 4. |
| 2048 | Boundary creek | At Greenwood | " " 5. |
| 2050 | Celeste creek | Near Albas | " " 2. |
| 2051 | Crazy creek | Tp. 23, R. 5, W. 6 M. | " " 2. |
| 2010 | Eagle river | Tp. 23, R. 6, W. 6 M. | " " 2. |
| 2064 | Granite creek | Near Coalmont | " " 4. |
| 2052 | Kettle river (N. Fork) | At Grand Forks | " " 5. |
| 2045 | Kettle river (W. Fork) | Near West bridge | " " 5. |
| 2046 | Kettle river (Nicholsons Bridge) | Near Kettle Valley | " " 5. |
| 2049 | Kettle river (Carson) | At Carson | " " 5. |
| 2031 | Niskonlith creek | Tp. 21, R. 13, W. 6 M. | " " 2. |
| 2053 | Okanagan river | Near Fairview | " " 4. |
| *2061 | Seymour river | Near Seymour Arm. | " " 2. |
| 2054 | Similkameen river | Near Ashnola | " " 4. |
| 2034 | Shuswap river | Tp. 18, R. 9, W. 6 M. | " " 2. |
| 2063 | South Similkameen river | At Princeton | " " 4. |
| 2055 | Tulameen river | At Coalmont | " " 5. |
| 2042 | Thompson river (Chase) | Tp. 21, R. 13, W. 6 M. | " " 2. |

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

KAMLOOPS DIVISION.—List of Regular Gauging Stations.

ASHCROFT DISTRICT.

| Station Number. | Name. | Location. | |
|-----------------|---------------------------------------|------------------------|----------------------|
| 2001 | Barnes creek | Tp. 20, R. 24, W. 6 M. | Prov. Water Dist. 2. |
| 2003 | Bonaparte river | Tp. 21, R. 24, W. 6 M. | " " 2. |
| 2007 | Criss creek | Tp. 22, R. 22, W. 6 M. | " " 2. |
| 2006 | Coldwater river | At Merritt | " " 3. |
| 2008 | Deadman river | Tp. 22, R. 22, W. 6 M. | " " 2. |
| 2012 | Fraser river (Lytton) | Tp. 15, R. 27, W. 6 M. | " " 1. |
| 2016 | Hat creek (above Hammond's diversion) | Tp. 19, R. 26, W. 6 M. | " " 2. |
| 2028 | Nahatlatch river (Upper) | Tp. 12, R. 27, W. 6 M. | " " 1. |
| 2027 | Nahatlatch river (Lower) | Tp. 12, R. 27, W. 6 M. | " " 1. |
| 2029 | Nicola river (Merritt) | At Merritt | " " 3. |
| 2030 | Nicola river (Mouth) | Tp. 17, R. 25, W. 6 M. | " " 3. |
| 2037 | Spius creek | Tp. 13, R. 23, W. 6 M. | " " 3. |
| 2039 | Thompson river (Spences Bridge) | Tp. 17, R. 25, W. 6 M. | " " 3. |

KAMLOOPS DIVISION.—List of Miscellaneous Gauging Stations.

KAMLOOPS DISTRICT.

| Name. | Location. | Prov. Water Dist. |
|--|----------------------------|-------------------|
| Alkali..... | Tp. 19, R. 19, W. 6 M..... | 2. |
| Bear..... | Near Raft river..... | " " 2. |
| Beaver river..... | Near Raft river..... | " " 2. |
| Cahilly..... | Tp. 23, R. 15, W. 6 M..... | " " 2. |
| Candle..... | Near Raft river..... | " " 2. |
| Chartrand..... | Tp. 17, R. 21, W. 6 M..... | " " 3. |
| Chartrand (Springs)..... | Tp. 17, R. 21, W. 6 M..... | " " 3. |
| Cherry creek (Cornwall ranch)..... | Tp. 19, R. 19, W. 6 M..... | " " 2. |
| Dupuis..... | Tp. 17, R. 21, W. 6 M..... | " " 3. |
| Edwards..... | Tp. 22, R. 16, W. 6 M..... | " " 2. |
| Greenstone creek..... | Tp. 17, R. 20, W. 6 M..... | " " 3. |
| Gordon..... | Tp. 22, R. 21, W. 6 M..... | " " 2. |
| Guichon creek (Chartrand's diversion)..... | Tp. 17, R. 21, W. 6 M..... | " " 3. |
| Guichon creek (F. Allen's ranch)..... | Tp. 18, R. 21, W. 6 M..... | " " 3. |
| Guichon creek (Chartrand's ranch)..... | Tp. 17, R. 21, W. 6 M..... | " " 3. |
| Hemp..... | Near Raft river..... | " " 2. |
| Hedley creek (Anderson's diversion)..... | Tp. 22, R. 16, W. 6 M..... | " " 2. |
| Meadow..... | Tp. 17, R. 21, W. 6 M..... | " " 3. |
| Noble..... | Tp. 21, R. 17, W. 6 M..... | " " 2. |
| Paul creek (at outlet of lake)..... | Tp. 20, R. 16, W. 6 M..... | " " 2. |
| Pendleton..... | Tp. 19, R. 19, W. 6 M..... | " " 2. |
| Quenville..... | Tp. 17, R. 21, W. 6 M..... | " " 3. |
| Three Mile..... | Tp. 20, R. 20, W. 6 M..... | " " 2. |
| Witch..... | Tp. 18, R. 21, W. 6 M..... | " " 3. |

KAMLOOPS DIVISION.—List of Miscellaneous Gauging Stations.

OKANAGAN DISTRICT.

| Name. | Location. | Prov. Water Dist. |
|--------------------|----------------------------|-------------------|
| Cinnemousun..... | Tp. 23, R. 7, W. 6 M..... | 2. |
| Quest..... | Tp. 24, R. 7, W. 6 M..... | " " 2. |
| Scotch..... | Tp. 22, R. 11, W. 6 M..... | " " 2. |
| Seymour creek..... | Near Seymour Arm..... | " " 2. |
| Sixmile..... | Near Granite creek..... | " " 4. |
| Twenty Mile..... | Near Hedley..... | " " 4. |

ASHCROFT DISTRICT.

| | | |
|--------------------------------------|----------------------------|----------------------|
| Hat creek (Hammond's diversion)..... | Tp. 19, R. 26, W. 6 M..... | Prov. Water Dist. 2. |
|--------------------------------------|----------------------------|----------------------|

NELSON DIVISION.

C. E. Richardson, Division Engineer.

The three districts comprising the Nelson division are the Nelson, the Revelstoke, and the Cranbrook. A general description of each district will be found on pages 48 and 49 of the division engineer's report.

Nelson district has been in charge of C. E. Richardson, B.A.Sc.

Revelstoke district has been in charge of J. A. Elliot, B.A.Sc.

Cranbrook district has been in charge of D. O'B. Gill, B.Sc.

A considerable number of gauging stations were established throughout this division by the Provincial Water Rights Branch, and on some of the small over-recorded irrigation streams the hydrographic work is still continued by that branch.

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Toward the end of October, Mr. Gill left the staff for active service with the Royal Engineers.

Computations for the Nelson and Revelstoke districts have been made by Mr. Richardson and Mr. Elliott, while the computations for the Cranbrook district have been made by Mr. Beeston, office engineer. All work was checked by the division engineer.

NELSON DIVISION—List of Regular Gauging Stations.

NELSON DISTRICT.

| Station Number. | Name. | Location. | |
|-----------------|--------------------------------|--|-------------------------|
| 3057 | Cariboo creek | Near Burton City | Prov. Water Dist. No. 6 |
| 3024 | Carpenter creek | Near New Denver | " " 6 |
| 3025 | Carpenter creek | Near Sandon | " " 6 |
| 3004 | Columbia river (Castlegar) | Near Castlegar | " " 6 |
| 3007 | Columbia river (Trail) | Near Trail | " " 6 |
| *3066 | Duncan creek | Near Howser | " " 6 |
| 3027 | Four Mile creek (below mill) | Near Silverton | " " 6 |
| 3028 | Four Mile creek (above intake) | Near Silverton | " " 6 |
| *3070 | Fry creek | Near Johnstones Landing 12 miles from Kaslo) | " " 6 |
| *3071 | Glacier creek | Near Howser | " " 6 |
| 3031 | Goat river | Near Erickson | " " 6 |
| 3029 | Kaslo creek | Near Kaslo | " " 6 |
| 3022 | Kooskanax creek | Near Nakusp | " " 6 |
| 3075 | Kootenay river | Near Bonnington falls | " " 6 |
| 3076 | Kootenay river | Near Bonnington pool | " " 6 |
| 3077 | Kootenay river | Near Nelson | " " 6 |
| 3014 | Kootenay river | Near Glade | " " 6 |
| *3068 | Lardeau river | Near Howser | " " 6 |
| 3021 | Nakusp creek | Near Nakusp | " " 6 |
| 3017 | Pend d'Oreille river | Near Waneta | " " 6 |
| 3026 | Sawmill creek | Near New Denver | " " 6 |
| 3018 | Slocan river | Near Crescent Val | " " 6 |
| *3023 | Wilson creek | Near Roseberry | " " 6 |

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data for 1914 will be returned in the report for 1915.

NELSON DIVISION.—List of Regular Gauging Stations.

REVELSTOKE DISTRICT.

| Station Number. | Name. | Location. |
|-----------------|------------------------------------|---|
| 3000 | Akolkolex river | Tp. 22, R. 1, W. 6 M. Prov. Water Dist. No. 8 |
| 3001 | Beaver river | Tp. 29, R. 25, W. 5 M. " " 8 |
| 3002 | Blaeberry river | Tp. 28, R. 22, W. 5 M. " " 8 |
| 3003 | Bugaboo creek | Near Spillimacheen. " " 8 |
| *3051 | Canyon creek | Tp. 25, R. 22, W. 5 M. " " 8 |
| 3005 | Columbia river (Golden) | Tp. 27, R. 22, W. 5 M. " " 8 |
| 3007 | Columbia river (Revelstoke) | Tp. 23, R. 2, W. 6 M. " " 8 |
| 3035 | Dutch creek | Near Fairmont Springs. " " 8 |
| 3062 | Field Springs (No. 1) | Tp. 28, R. 18, W. 5 M. " " 8 |
| 3063 | Field Springs (No. 2) | Tp. 28, R. 18, W. 5 M. " " 8 |
| 3064 | Field Springs (No. 3) | Tp. 28, R. 18, W. 5 M. " " 8 |
| 3036 | Forslay creek | Near Thunder Hill. " " 8 |
| 3038 | Horseshief creek | Near Wilmer. " " 8 |
| 3008 | Hospital creek (Weir) | Tp. 27, R. 22, W. 5 M. " " 8 |
| 3053 | Illecillewaet river (Glacier) | Tp. 26, R. 26, W. 5 M. " " 8 |
| 3010 | Illecillewaet river (Revelstoke) | Tp. 23, R. 2, W. 6 M. " " 8 |
| 3030 | Incomapleux river | Near Beaton. " " 8 |
| 3011 | Kicking Horse river (Golden) | Tp. 27, R. 22, W. 5 M. " " 8 |
| 3012 | Kicking Horse river (Field) | Tp. 28, R. 18, W. 5 M. " " 8 |
| 3013 | Kicking Horse river (No. 2 Tunnel) | Tp. 28, R. 18, W. 5 M. " " 8 |
| 3015 | No. 2 Creek | Near Wilmer. " " 8 |
| *3074 | Salmon river | Near Beaton. " " 8 |
| 3034 | Sinclair creek | Near Sinclair. " " 8 |
| 3019 | Spillimacheen river | Near Spillimacheen. " " 8 |
| *3060 | Shuswap river | Near Athalmer. " " 8 |
| *3061 | Stoddart creek | Near Athalmer. " " 8 |
| 3020 | Toby creek | Near Athalmer. " " 8 |
| 3032 | N. Vermillion creek | Near Edgewater. " " 8 |
| 3033 | S. Vermillion creek | Near Edgewater. " " 8 |
| *3054 | Washout creek | Near Galena. " " 8 |
| 3055 | Windermere creek | Near Windermere. " " 8 |

NOTE.—Stations marked with an asterisk (*) have been only recently established, and sufficient measurements of discharge have not been taken to deduce a curve and daily discharges. Gauge readings are being systematically recorded, and run-off data will be returned in the report for 1915.

NELSON DIVISION.—List of Regular Gauging Stations.

CRANBROOK DISTRICT.

| Station Number. | Name. | Location. |
|-----------------|-------------------|--|
| 3039 | Bull river | Near Bull river. Prov. Water Dist. No. 7 |
| 3038 | Cherry creek | Near Wasa. " " 7 |
| 3048 | Elk river | Near Elko. " " 7 |
| 3047 | Gold creek | Near Newgate. " " 7 |
| 3041 | Kootenay river | Near Wardner. " " 7 |
| 3045 | Linklater creek | Near Newgate. " " 7 |
| 3037 | Mark creek | Near Marysville. " " 7 |
| *3056 | Moyie creek | Near Kingsgate. " " 7 |
| 3044 | Mud creek | Near Elko. " " 7 |
| 3046 | Phillips creek | Near Roosville. " " 7 |
| 3049 | Rock creek | Near Baynes. " " 7 |
| 3042 | Big Sand creek | Near Jaffray. " " 7 |
| 3043 | Little Sand creek | Near Jaffray. " " 7 |
| 3050 | St. Marys river | Near Wycliffe. " " 7 |

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NELSON DIVISION—List of Miscellaneous Gauging Stations.

NELSON DISTRICT

| Name. | Location. |
|---------------------|--|
| Kootenay river..... | Near Taghun..... Prov. Water Dist. No. 6 |

REVELSTOKE DISTRICT.

| | | |
|---------------------|----------------------------|-------------------------|
| Boulder creek..... | Tp. 3, R. 27, W. 6 M..... | Prov. Water Dist. No. 8 |
| Columbia river..... | Near Athalmer..... | " " 8 |
| Field river..... | Tp. 28, R. 18, W. 5 M..... | " " 8 |
| Horse..... | Tp. 26, R. 21, W. 5 M..... | " " 8 |
| Hospital..... | Tp. 27, R. 22, W. 5 M..... | " " 8 |

CRANBROOK DISTRICT.

| | | |
|------------------|----------------------|-------------------------|
| Little Bull..... | Near Bull river..... | Prov. Water Dist. No. 7 |
| Lewis..... | Near Wasa..... | " " 7 |
| Sheep..... | Near Wasa..... | " " 7 |
| Skookumchuk..... | Near Wasa..... | " " 7 |

EXPLANATION OF TABLES.

For each regular gauging station the following data are given so far as available:—

1. Description of station.
2. Table of discharge measurements.
3. Daily gauge-height discharge table.
4. Tables of monthly discharges and run-off.

Under the description of stations is given the location, general information regarding the equipment, and the time the station has been maintained. Regarding stations established this year, is given briefly, the source, description of drainage area, and present uses of the river. In addition, the description covers ice conditions and their effect on the relation of gauge height to discharge.

The table of discharge measurements gives the number of measurements made during the year, the date measurement was made, name of hydrographer, the width and area of the cross section and the discharge in cubic feet per second. The zero of the gauge is placed in an arbitrary datum, and has no relation to the zero flow or bed of the river. In general, the zero is located below the lowest known flow.

The daily gauge-height discharge table gives the daily elevation of the surface of the river above the zero of the gauge, and the daily discharge in cubic feet per second for the observed gauge height.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gauge height was highest. As the gauge height is the mean for the day, there may have been short periods when the gauge height and corresponding discharges were higher than given in this column. Likewise in the column of "Minimum" the quantity given is the mean flow for the day when the mean gauge height was lowest. The column headed "Mean" is the average flow for each second during the month. On this the computations for the remaining columns are based.

DEFINITIONS OF TERMS.

The volume of water flowing in a stream called the run-off or "discharge" is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as second feet, gallons per minute, and run-off in second feet per square mile; and (2) those which represent the actual quantity of water, as run-off in depth in inches and acre feet.

The units used in this report are second-feet, second-feet per square mile, run-off in inches, and acre-feet.

"Second-foot" is an abbreviation for a cubic foot per second (c.f.s.) and is the rate of discharge of water flowing in a stream 1 foot wide, 1 foot deep, at a rate of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the following table of equivalents.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

"Acre-foot" is equivalent to 43,560 cubic feet, and is the quantity required to cover an acre to the depth of 1 foot. It is a common unit of measurement of quantity, and is generally used in connection with storage.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:—

- 1 second-foot equals 35.71 British Columbia miner's inches.
- 1 second-foot equals 6.23 British imperial gallons per second; equals 538,472 gallons for one day.
- 1 second-foot equals 7.48 United States gallons per second; equals 646,272 gallons for one day.
- 1 second-foot for one year covers 1 square mile 1.131 feet or 13.572 inches deep.
- 1 second-foot for one year equals 31,536,000 cubic feet; equals 724 acre-feet.
- 1 second-foot equals about 1 acre-inch per hour.
- 1 second-foot for one day equals 86,400 cubic feet; equals 1.983 acre-feet.
- 1 second-foot for one 28-day month equals 55.52 acre-feet.
- 1 second-foot for one 29-day month equals 57.50 acre-feet.
- 1 second-foot for one 30-day month equals 59.48 acre-feet.
- 1 second-foot for one 31-day month equals 61.46 acre-feet.
- 1 second-foot for one 28-day month covers 1 square mile 1.041 inches deep.
- 1 second-foot for one 29-day month covers 1 square mile 1.079 inches deep.
- 1 second-foot for one 30-day month covers 1 square mile 1.116 inches deep.
- 1 second-foot for one 31-day month covers 1 square mile 1.153 inches deep.
- 100 British imperial gallons per minute equals 0.268 second-feet.
- 100 United States gallons per minute equals 0.223 second-feet.
- 1,000,000 British imperial gallons per day equals 1.86 second-feet.
- 1,000,000 United States gallons per day equals 1.55 second-feet.
- 1,000,000 British imperial gallons equals 3.68 acre-feet.

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- 1,000,000 United States gallons equals 3.07 acre-feet.
 1,000,000 cubic feet equals 22.95 acre-feet.
 1 acre-foot equals 43,560 cubic feet.
 1 acre-foot equals 271,472 British imperial gallons.
 1 acre-foot equals 325,850 United States gallons.
 1 inch deep on 1 square mile equals 2,323,200 cubic feet.
 1 inch deep on 1 square mile equals 0.0737 second-foot per year.
 1 acre equals 43,560 square feet.
 1 cubic foot equals 6.23 British imperial gallons.
 1 cubic foot equals 7.48 United States gallons.
 1 cubic foot of water weighs 62.4 pounds.
 1 horse-power equals 550 foot-pounds per second.
 1 horse-power equals 746 watts.
 1 horse-power equals 1 second-foot falling 8.80 feet.

To calculate water power quickly:

$$\frac{\text{sec.-ft.} \times \text{fall in feet}}{11} = \text{net horse-power on water wheel, realizing 80 per cent of theoretical power.}$$

ACCURACY AND RELIABILITY OF DATA.

Practically all discharge measurements made under fair conditions are well within 5 per cent of the true discharge of the time of observation. Inasmuch as the errors of meter measurements are largely compensating, the mean rating curve, when well defined, is much more accurate than the individual measurements.

In order to give information regarding the probable accuracy of the computed results, an accuracy column is inserted in the monthly discharge table. Accuracy "A" indicates that the mean accuracy is probably accurate within 5 per cent; "B" within 10 per cent; "C" within 15 per cent; "D" within 15 to 25 per cent. Special conditions are covered by foot notes.

The accuracy in many cases is not as great as we would wish, the area covered is very large, and a large number of the stations have been maintained for less than a year. Future observations may render necessary a certain amount of revision of the data here supplied.

The topographic surveys of the province are very incomplete, and the drainage areas are, in many cases, only approximate; consequently the figures showing discharge per square mile, and run-off depth in inches may be somewhat in error.

METHODS OF MEASURING STREAM FLOW.

It is not intended to enter into a discussion of these methods in the report. The methods used are practically identical with those used by the Water Resources Branch of the United States Geological Survey, recognized the most up-to-date method of stream flow measurement. The text of "River Discharge" by Holt and Grover amply illustrates the methods employed.

CO-OPERATION AND ACKNOWLEDGMENTS.

Thanks are due to Mr. G. R. G. Conway, of the British Columbia Electric Railway Company; Mr. R. F. Hayward, of the Western Canada Power Company, Vancouver; and Mr. Wm. Young, Comptroller of Water Rights, Department of Lands, Victoria, B.C., for stream flow and other data submitted with this report. Thanks are also due Mr. F. H. Peters, Commissioner of Irrigation, Department of the Interior, Calgary, by whose courtesy our current-meters have been rated each year.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 2

Coast Division

REPORT OF C. G. CLINE, B.A.Sc., D.L.S.

Division Engineer.

CHAPTER II.

COAST DIVISION.

TERRITORY.

The boundaries of the Coast division follow the lines of the watersheds as much as possible in order to facilitate the work of stream measurement. The districts into which the Coast division has been divided follow the same plan. For this reason it is rather difficult to exactly outline the boundaries of the division and districts.

The Coast division includes the southwestern portion of British Columbia as far as North Bend on the Canadian Pacific railway, and Lillooet on the Pacific Great Eastern Railway; It also includes the whole of Vancouver island. All stations numbered between 1,000 and 1,065 are in the Coast division. Reference to the key map will show the general extent of the territory covered.

USES OF WATER.

In this division the chief use to which water may be put is for power, and a large number of streams are commercially valuable for this purpose only.

PRESENT WATER-POWER DEVELOPMENTS.

A small portion only of the power available is at present developed, and a list of the streams on which water power is being developed is included in this report. Some of these plants are described herein, but most of the descriptions were given in the report for 1913. In such cases the description is not repeated, but proper references are given.

POSSIBLE WATER-POWER DEVELOPMENTS.

In last year's report a list was given of a number of streams with water-power possibilities, supplemented in most cases by a general description of a practicable scheme of development. In this report, this list is reprinted and amplified, but descriptions are not reprinted; proper references are, however, inserted. Streams not included in last year's list are described in detail herein. This list is being made as complete as possible as new ground is covered from year to year.

MUNICIPAL SUPPLY.

Every city and municipality of any size requires a good supply of clear, uncontaminated water for domestic purposes. At present regular measurements are being made on a number of streams used in this way, and a list of these is included herein. As the country develops the number of streams required for such a purpose will naturally increase.

RECLAMATION.

In certain parts of the division there are tracts of land, which, though they are at present of comparatively little value for agricultural purposes could be reclaimed at a reasonable expense. In constructing a system of dykes and

making channel improvements to reclaim such land, there is generally some stream which must be controlled. Accurate records of the run-off of such rivers is of prime importance. A number of these streams are being gauged at present a list of which is appended.

IRRIGATION.

In the vicinity of Lillooet it is necessary to irrigate the farms, and water from a number of streams is used for this purpose. A list is here given of the irrigation streams on which regular measurements are being made during the irrigation season, and includes a number of streams which are not used for irrigation at present, but which may be used at some time in the future, when the necessary engineering works have been constructed.

LOCATION OF STATIONS.

Gauging stations are generally established close to possible future points of diversion for water supply, irrigation or power. On some streams, however, the desired location is so difficult of access that the cost of maintaining a gauging station would be prohibitive; in such cases, stations are established at more convenient places and from the records so obtained the stream flow at the desired site is estimated.

PRECIPITATION AND TEMPERATURE.

Records have been prepared showing the monthly precipitation and the mean monthly temperatures for 1914 at the various stations, and the variation from the average where the records have been kept for a sufficient number of years to render these figures of any value is also given. A study of these tables will show the general effect of these important factors on the flow of the streams, and the figures for the variation from the average for a number of years will indicate to some extent, the general characteristics of the stream flow for 1914 as compared with other years.

COMPARISON OF STREAM MEASUREMENTS.

A table is also included, giving the monthly discharges of a number of gauging stations for the past two or three years, thus providing a ready means for the comparison of yearly run-off. The continuance of the stream measurement work will make comparisons of this nature increasingly valuable from year to year.

One of the outstanding features in 1914 was the very heavy freshet which, with the exception of the Fraser river, occurred early in January on nearly all the streams in the Coast division. A winter flood of this nature is not an uncommon occurrence in this part of the country, although it is not usually so great as during this past year.

DISTRICTS.

The territory comprising the Coast division has been divided into three districts. The Southern district includes that portion of the Railway Belt which lies in the Coast division, and some contiguous watersheds not included in either of the other districts. The Lillooet district includes the streams along the route of the Pacific Great Eastern railway from the head of Howe sound to the vicinity of Lillooet. Beyond Lillooet the territory is included in the Kamloops division. Vancouver island constitutes a district by itself.

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Work was started in the Southern district in the Railway Belt late in the fall of 1911, so that on some of the streams there are now three years' complete measurements—1912, 1913, and 1914. The monthly and yearly discharges at these stations are tabulated in this report for the purpose of comparing the flow for 1914 with that of the previous two years. Such comparisons should be of considerable value in considering streams on which there are measurements for one year only. The work in the Southern district was extended during 1913 and 1914 to include a number of streams outside the Railway Belt.

Work was started in the Lillooet district in the fall of 1913, so that on some of the streams there is one year's complete records. A number of other stations were established in 1914, and the list will probably be somewhat increased in 1915. Transportation conditions in this district have until recently been very poor, and on that account the work has been delayed. The completion of the Pacific Great Eastern railway from Squamish to Lillooet will greatly better conditions during 1915, and will ensure a much greater number of measurements in a shorter time.

On Vancouver island, work was started by the engineers of this survey in the spring and summer of 1914. On some of the streams the stations had already been established by the engineers of the Provincial Water Rights Branch, and in such cases records are available for a whole year. Some of the stations were not established until after the spring freshet, so that the rating curves are not well defined for the higher stages; this will be remedied during 1915.

General descriptions have been prepared by the engineers in charge of each district, covering more especially the local conditions and particulars of the work peculiar to each district.

SOUTHERN DISTRICT.

The general characteristics of the Southern district are determined mainly by the mountainous nature of the country and its proximity to the Pacific ocean.

The commercial and industrial activities of the cities and harbours of the Burrard peninsula have been developed within a few miles of large areas of virgin forests and snow-capped mountains. The settlement is confined mainly to the Fraser valley, and the valleys of the tributary streams are almost entirely unoccupied. The transportation facilities in the valleys are very poor, and it is hard to find any one to read the gauges, and it is both difficult and expensive to maintain gauging stations except near the mouths of these streams.

The influence of the mountains is shown in the local variations in the precipitation. In the lower Fraser valley the average rainfall is about 60 inches. At Ladner and Steveston, which are not near the hills, it is only 40 inches or less. It increases rapidly as the hills are approached, sometimes doubling in amount within a few miles. At Coquitlam junction the average is about 70 inches, while at lake Coquitlam, some 10 miles farther north, the average is about one hundred and fifty. This is the largest average precipitation recorded at any of the stations, though even this amount is probably exceeded on some of the mountains.

The effect of the ocean is seen in the mildness of the climate in the lower Fraser valley. Near sea-level there is very little ice and snow in winter, and the summer is not exceedingly hot, the seasonal variation at any one place being comparatively small. There is, however, a considerable difference of temperature at different altitudes, with the result that though there is little or no snow at sea-level, there is a very heavy fall of snow among the hills. On the mountain peaks snow remains nearly all summer.

A reference to the tables of precipitation and temperature for the Southern district will show more definitely the special characteristics of the weather for 1914. The stations near the top of the tables are the ones nearest the coast, while those near the bottom are the ones farther east. The first four stations, Britannia Beach, Vancouver, Steveston, and Ladner are all on the coast, with Britannia Beach farthest north and Ladner farthest south. One set of tables gives the total monthly and annual precipitation and the mean monthly and annual variation from the corresponding averages for the last ten years or more.

This second set of tables shows how the precipitation and temperature for 1914 compared with the average. On the whole, the year was somewhat drier and considerably warmer than usual. The most unusual occurrence was the extra heavy precipitation in January, accompanied by warm weather. This caused a very large run-off during the month, and as a result the amount of snow on the hills was considerably reduced. The warmer weather during the spring and summer resulted in an earlier melting of the snow than usual, with a consequent earlier low-water period toward the end of the summer, while on the other hand the heavier precipitation of September and October ended the low-water stage at an earlier date than usual. The warm weather of November was followed by a cold snap in the latter part of December.

The effect of these variations in the weather is seen in the flow of the streams, the table of comparison of monthly discharges gives the average monthly discharges for certain streams for the last three years. It shows a larger discharge for 1914 during January and also in March and April. The flow fell off for July, and the summer low-water came in August and early in September. There were freshets in September and October and high water in November. Towards the end of December the streams were low. For the whole year, the warmer weather caused a larger run-off than usual on the streams which have very extensive snowfields; on the others, the lighter precipitation was reflected in the somewhat smaller discharge. The Fraser river, having such an extensive drainage area, responds only to variations common to the greater part of the country through which it flows.

LILLOOET DISTRICT.

This district includes the country along the Pacific Great Eastern railway from Squamish to Lillooet. Squamish is situated on tidewater at the head of Howe Sound. Lillooet is on the Fraser river, 120 miles inland, and at an elevation of 850 feet. Midway between the two is the Lillooet river, with a broad valley known as Pemberton Meadows.

From Squamish, the railroad climbs up through the canyon of the Cheakamus river to the lakes at the summit, rising 2,000 feet in 38 miles. There are four lakes at practically the same elevation, and they extend about 8 miles. Green lake is the largest and discharges through Green river into the Lillooet river, falling 1,400 feet in 14 miles. Nairn falls is located about 8 miles from the mouth, and has a drop of some two hundred feet in a quarter of a mile. Soo river and Sixmile creek empty into Green river above the falls.

The Lillooet river flows for a considerable distance through the Pemberton Meadows, and enters Lillooet lake just below the mouth of Green river. During this part of its course the Lillooet river has very little fall, it consequently overflows its banks, flooding most of the bottom land in the meadows. There is a large area of very fertile land in the Lillooet valley, and when some system of controlling the river is put in operation it should develop into a very important agricultural district.

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The town of Lillooet is on the west side of the Fraser river, 3 miles east of Seton lake. It has a population of about 600 and is situated in quite an extensive farming district. The climate is very dry, so that irrigation is absolutely necessary for the production of crops. The large amount of bright sunshine and warm weather during the summer, combined with the general fertility of the soil, produces very rapid growth when the necessary moisture is supplied by irrigation. Measurements are being made on a number of irrigation streams in this vicinity.

VANCOUVER ISLAND DISTRICT.

The Vancouver Island district comprises the whole of Vancouver island. The island has an area of approximately 12,900 square miles, being some 260 miles in length, with an average width of 50 miles. Vancouver island lies off the southern coast of British Columbia, and trends N. 50° W. along the coast.

Vancouver island is divided into two principal drainages, those of the east and west coast, by the Beaufort range of mountains. This range extends from a group in the south of which mount Arrowsmith at an altitude of 5,900 feet predominates to a much larger group in the north, several of whose peaks rise over 7,000 feet. Glaciers are to be found on several of the higher peaks. With the mountainous interior and a comparatively narrow coastal plane, the rivers, for the most part, are short and have considerable fall. This is most advantageous for hydro-electric developments. The streams which do not rise from lakes are mostly flashy.

The climate is moderate, the mean temperatures of each month varying from a minimum of about 30 degrees to a maximum of 65 degrees, except in the higher altitudes. The precipitation is least on the southeast coast, averaging some 30 inches. It increases rapidly especially up to the west coast, to a precipitation of about 130 inches at the north end of the island. The rainfall is usually least in the months of July and August and greatest in the month of November in all parts of Vancouver island.

The accompanying tables show the temperatures and precipitation at five different localities for the year 1914. Tables giving the monthly variation, for 1914, from the monthly average temperature and precipitation for the past ten years or more, are also shown. From these tables it is seen that the temperature on the whole island was above the average, while the precipitation was also higher.

The means of transportation are improving rapidly. The Esquimalt and Nanaimo Railway, which has been operating between Victoria, Nanaimo, and Port Alberni, opened its extension from Parksville to Courtenay in August, 1914. The Canadian Northern Pacific railway line from Victoria to Alberni is nearing completion and a line is located as far as Campbell river. The Great Northern operates a line on the Saanich peninsula from Sidney to Victoria. The Canadian Northern also has a line under construction from Victoria to Patricia bay on the Saanich peninsula. There is a good coastal service maintained by several navigation companies. These, with the excellent government highways, will greatly assist in the further development of Vancouver island.

The excellent agricultural possibilities on the island, due to the richness of the soil and the abundant rainfall, is well exemplified by the fine farms in the older settlements of the Saanich, Cowichan, and Comox districts.

Vancouver island is rich in mineral wealth. The large coal deposits in the vicinity of Nanaimo and Cumberland are all being extensively mined. On the west coast, valuable deposits of gold and copper have been found. Cement is manufactured extensively in the Saanich district. Good pottery clay is found near Victoria; pottery to the value of \$90,000, and bricks to \$140,000 were manufactured in 1913. Two powder factories have plants on the island.

The timber wealth of the island is its greatest asset. Considerable timber has already been cut, but the lumber industry may still be considered in its infancy.

The British Columbia Electric Railway Company installed the first hydro-electric plant on Vancouver Island on the Goldstream river in 1898, about 15 miles from Victoria. This plant at present develops 3,000 horse-power. There are four units: two 350 k.w., one 500 k.w., and one 1,000 k.w. Current is generated at 700 volts, and is stepped up to 17,500 volts. The development consists of one pipeline of 33 inch pipe, 4,000 feet long, branching into 30 inch pipes at the back of power-house. The head is 680 feet.

Another more recent development of the British Columbia Electric Company is at the mouth of Jordan river, where 25,000 horse-power is developed from three units: two 6,000 horse-power and one 13,000 horse-power. The plant works under a high pressure head of 1,145 feet. The pipeline for the first two units (4,000 k.v. a. generator, and Doble wheel) is 2,600 feet in length. It is 50 inches in diameter at intake, and Ys to 36-inch pipes, which are reduced to 30 inches at the power-house. The third unit (8,000 k.v.a. generator, and Pelton Doble wheel) uses a 54-inch pipe at the intake, reduced to 44 inches at the power-house. Current is generated at 2,200 volts and is stepped up to 60,000 volts.

Both these plants are used to supply light and power in the city of Victoria and surrounding district.



Impounding dam of Puntledge River Hydro-Electric Installation on Puntledge river near outlet from Comox lake.

The Puntledge River Hydro-Electric Installation, owned by the Canadian Collieries (Dunsmuir) Limited, is located on the Puntledge river about 6 miles above Courtenay. The plant is operated under a static head of 350 feet. The pipeline is 10,500 feet in length. The line consists of a single 8 foot wooden stave pipe from forebay, to a Y for two 6 foot pipes; only one is used at present and leads to a Y from which two 50 inch pipes carry water to the power-house.

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Diversion dam showing flume to intake, of Puntledge River Hydro-Electric Installation on Puntledge river about two miles below impounding dam.

Present installation developing 12,500 horse-power, consists of one-half of ultimate plant. The generators are 4,400 k. v. a., 13,200 volt machines. The turbines are of Francis reaction type with single runner on horizontal axis.

This plant supplies light and power for the mines and the several towns of Cumberland, Bevan, Union Bay, and Courtenay.

The Campbell River Power Company have made extensive surveys in view of a large development at the falls on Campbell river, about 7 miles from the mouth.

The Ritchie Agnew Power Company contemplates the installation of a plant to develop about 35,000 horse-power on the Stamp river at Stamp falls, about 8 miles from Alberni.

There are many other streams on which surveys have been made, and which offer good possibilities for hydro-electric development, notably, Little Qualicum river, Nanaimo river, and Sproat river.

Owing to the abundant rainfall, practically no water is required for irrigation. The uses of water on Vancouver island are principally confined, therefore, to municipal water supply and power development.

The numerous large lakes which are located throughout the island afford a cheap means of assembling the timber cut from their shores, as well as good storage for large developments. Many ranchers have small hydro-electric plants to supply light and power for their own use. This is made practicable by the many small streams coming from the hills and cheap developments are possible. For the manufacture of electric chemicals, Vancouver island offers several excellent developments. On Cowichan river, the Government have a large fish hatchery, and the Cowichan river has been reserved for fishing.

Stream measurements were started in May, 1914, on Vancouver island, by the British Columbia Hydrographic Survey. Previous to that time, work had been done by the Provincial Water Rights Branch. Sixteen regular metering

stations were maintained and rated during the year. The Provincial Water Rights Branch gave every assistance possible and supplied much valuable data on many of the streams on which they had already done work.

During 1915 it is hoped to extend the work to the west coast and north end of the island, besides maintaining the stations already established.

DEVELOPED WATER-POWERS.

These plants are described either in this report or in the report for 1913, i.e., Water Resources Paper No. 8. This list will show where these descriptions can be found. The measurements taken in 1914 are given in the 1914 report.

SOUTHERN DISTRICT.

| | | | |
|----------------------|--|---|---|
| Coquitlam river..... | 1913 report (Water Resources Paper No. 8). | | |
| Gilley creek..... | 1913 | “ | “ |
| Power river..... | 1913 | “ | “ |
| Stave river..... | 1913 | “ | “ |

LILLOOET DISTRICT.

| | | | |
|------------------------|--|--|--|
| McGillivray creek..... | 1914 report (Water Resources Paper No. 14) | | |
| | Seton creek. | | |

VANCOUVER ISLAND.

| | | | |
|-----------------------|---|---|---|
| Puntledge river..... | 1914 report (Water Resources Paper No. 14). | | |
| Jordan river..... | 1914 | “ | “ |
| Goldstream river..... | 1914 | “ | “ |

POSSIBLE WATER-POWER DEVELOPMENTS.

A general description of each possible development has been given either in this report or in the report for 1913. This list will show where these descriptions may be found. The stream-flow data are included in the 1914 report.

SOUTHERN DISTRICT.

| | | | |
|----------------------------------|--|---|---|
| Chehalis river..... | 1913 report (Water Resources Paper No. 8). | | |
| Chilliwack river..... | 1913 | “ | “ |
| Coquihalla river..... | 1913 | “ | “ |
| Jones Creek..... | 1913 | “ | “ |
| Mesliloet (Indian river)..... | 1913 | “ | “ |
| Mesliloet river tributaries..... | 1913 | “ | “ |
| Nicolum river..... | 1914 | “ | “ |
| North Lillooet river..... | 1913 | “ | “ |
| Rainbow creek..... | 1913 | “ | “ |
| Raven creek..... | 1913 | “ | “ |
| Samallow river..... | 1914 | “ | “ |
| Silver-Hope creek..... | 1913 | “ | “ |
| Silver-Pitt creek..... | 1913 | “ | “ |
| Slollicum creek..... | 1913 | “ | “ |
| South Lillooet river..... | 1913 | “ | “ |

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LILLOOET DISTRICT.

| | | | |
|------------------------------|------|---------------------------------------|----|
| Bridge river..... | 1913 | report (Water Resources Paper No. 8). | |
| Cheakamus river..... | 1913 | “ “ | |
| Cayuse creek..... | 1914 | “ “ | 14 |
| Green river..... | 1913 | “ “ | |
| Little Blackwater river..... | 1914 | “ (Seton) “ | |
| Soo river..... | 1914 | “ “ | |

VANCOUVER ISLAND.

| | | | |
|-----------------------------------|------|--|--|
| Campbell river..... | 1914 | report (Water Resources Paper No. 14). | |
| Stamp river at falls..... | 1914 | “ “ | |
| Little Qualicum river..... | 1914 | “ “ | |
| Nanaimo river..... | 1914 | “ “ | |
| Sproat river..... | 1914 | “ “ | |
| Stamp river at Great Central lake | 1914 | “ “ | |

IRRIGATION STREAMS.

A general description of each stream has been given either in this report or in the report for 1913. This list will show where the description may be found. The measurements made in 1914 are given in the 1914 report.

SOUTHERN DISTRICT.

Silver-Hope creek, 1913 report. (Water Resources Paper No. 8).

LILLOOET DISTRICT.

| | | | |
|-----------------------|------|--|--|
| Cayuse creek..... | 1914 | report (Water Resources Paper No. 14). | |
| Fountain creek..... | 1914 | “ “ | |
| Laluwissin creek..... | 1914 | “ “ | |
| Riley creek..... | 1914 | “ “ | |
| Texas creek..... | 1914 | “ “ | |

VANCOUVER ISLAND.

No irrigation.

MUNICIPAL WATER SUPPLY.

A general description of each stream has been given either in this report or in the report for 1913. This list will show where these descriptions may be found. The measurements for 1914 are given in the 1914 report.

SOUTHERN DISTRICT

| | | | |
|------------------------|--|---------------------------------------|--|
| Capilano creek..... | 1913 | report (Water Resources Paper No. 8). | |
| Lynn creek..... | 1913 | “ “ | |
| Seymour creek..... | 1913 | “ “ | |
| Silver-Pitt creek..... | 1913 | “ “ | |
| Trout Creek..... | Miscellaneous measurements only—1914 report. | | |
| Windermere creek..... | Miscellaneous measurement only—1914 report. | | |

VANCOUVER ISLAND.

Shawnigan creek.....1914 report.
Soo river.....Miscellaneous measurements only.

RECLAMATION AND DRAINAGE

The data for 1914 of the streams which are of interest in connection with reclamation and drainage projects is given in this report and the description in the 1913 report.

SOUTHERN DISTRICT.

Chilliwack river.
Silver-Pitt creek.

LILLOOET DISTRICT.

Lillooet river.

TOTAL MONTHLY PRECIPITATION, Southern District, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-------------------------|-------|------|-------|------|------|-------|-------|------|-------|-------|-------|------|--------|
| Britannia Beach..... | 16-85 | 3-80 | 5-86 | 5-32 | 1-48 | 2-08 | 0-48 | 0-77 | 8-25 | 14-42 | 14-94 | 2-45 | 76-70 |
| Vancouver..... | 10-56 | 4-57 | 3-33 | 3-28 | 0-74 | 3-58 | 0-42 | 0-75 | 6-86 | 6-37 | 10-18 | 2-54 | 53-78 |
| Steveston..... | 8-41 | 2-10 | 1-44 | 2-46 | 0-53 | 2-44 | 0-13 | 0-37 | 3-60 | 4-41 | 6-17 | 2-59 | 34-65 |
| Ladner..... | 5-45 | 2-60 | 1-90 | 1-65 | 0-45 | 1-90 | 0-35 | 0-20 | 2-65 | 2-60 | 6-35 | 0-95 | 27-05 |
| Buntzen lake..... | 19-29 | 7-82 | 8-04 | 5-08 | 3-38 | 4-69 | 0-80 | 1-13 | 10-99 | 15-25 | 18-90 | 3-59 | 98-96 |
| Coquitlam lake..... | 26-51 | 9-54 | 10-00 | 6-92 | 4-71 | 5-26 | 0-57 | 1-30 | 13-85 | 20-27 | 25-37 | 5-28 | 129-58 |
| Coquitlam junction..... | 13-21 | 5-69 | 4-09 | 4-70 | 1-36 | 4-19 | 0-77 | 0-88 | 7-98 | ..... | 12-09 | 3-23 | ..... |
| New Westminster..... | 9-95 | 4-78 | 3-27 | 3-95 | 1-04 | 4-11 | 0-56 | 0-68 | 5-57 | 5-62 | 10-95 | 2-44 | 52-92 |
| Stave Falls..... | 12-22 | 4-72 | 5-60 | 7-49 | 2-65 | 4-18 | 0-87 | 0-54 | 9-86 | 7-63 | 15-20 | 3-13 | 74-09 |
| North Nicomen..... | 17-01 | 4-44 | 5-09 | 5-00 | 2-61 | 3-08 | 0-08 | 0-51 | 8-15 | 6-45 | 12-64 | 2-70 | 67-76 |
| Agassiz..... | 13-96 | 4-06 | 3-12 | 2-94 | 3-55 | 5-18 | 0-15 | 0-60 | 6-29 | 7-53 | 14-72 | 0-53 | 62-63 |
| Jones creek..... | 15-19 | 4-46 | 8-87 | 6-22 | 7-15 | 5-21 | 1-06 | 0-89 | 7-01 | 5-50 | 14-75 | 2-31 | 78-62 |
| Chilliwack..... | 14-68 | 3-27 | 4-49 | 3-94 | 1-97 | 3-14 | 0-17 | 0-45 | 6-35 | 4-71 | 9-87 | 2-08 | 55-12 |
| Hope..... | 10-94 | 4-31 | 5-01 | 3-62 | 3-10 | 1-96 | 0-11 | 0-79 | ..... | 3-83 | 10-25 | 1-70 | ..... |

MEAN MONTHLY TEMPERATURE, Southern District, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|----------------------|------|------|------|------|------|-------|-------|------|-------|------|------|------|-------|
| Britannia Beach..... | 38-8 | 38-9 | 46-3 | 49-2 | 55-8 | 55-0 | 59-8 | 59-6 | 53-9 | 53-5 | 42-2 | 37-0 | 49-2 |
| Vancouver..... | 40-5 | 38-7 | 44-9 | 50-6 | 56-4 | 58-7 | 63-5 | 61-8 | 54-8 | 52-5 | 44-5 | 36-4 | 50-3 |
| Steveston..... | 40-6 | 38-0 | 42-6 | 47-8 | 53-1 | 57-1 | 61-6 | 58-8 | 53-8 | 50-6 | 43-8 | 34-2 | 45-5 |
| Ladner..... | 43-4 | 38-8 | 45-1 | 50-4 | 55-0 | 56-8 | 62-5 | 60-4 | 55-9 | 51-2 | 45-1 | 34-5 | 50-2 |
| New Westminster..... | 38-8 | 37-7 | 44-7 | 50-6 | 57-4 | 59-3 | 64-1 | 63-5 | 55-0 | 53-1 | 43-2 | 35-1 | 50-2 |
| Stave Falls..... | 38-2 | 36-1 | 43-4 | 49-7 | 58-1 | 60-5 | 65-9 | 64-3 | 55-4 | 53-0 | 43-6 | 33-7 | 50-2 |
| North Nicomen..... | 38-6 | 38-1 | 46-0 | 52-0 | 58-8 | 59-9 | 64-7 | 64-4 | 55-2 | 53-5 | 44-1 | 34-6 | 50-8 |
| Agassiz..... | 38-0 | 39-6 | 45-0 | 51-6 | 56-3 | 57-2 | 62-1 | 63-0 | 54-2 | 50-4 | 42-6 | 35-2 | 49-6 |
| Jones lake..... | 30-0 | 29-0 | 34-0 | 40-0 | 50-0 | 51-0 | 60-0 | 61-0 | 50-0 | 45-0 | 35-7 | 25-5 | 42-6 |
| Chilliwack..... | 36-9 | 37-3 | 45-1 | 51-2 | 54-8 | 58-3 | 63-2 | 61-7 | 54-7 | 52-0 | 43-3 | 34-1 | 49-4 |
| Hope..... | 33-6 | 34-2 | 42-4 | 51-2 | 56-5 | 58-6 | 65-3 | 64-7 | | 50-4 | 40-1 | 29-8 | |

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DIFFERENCE FROM AVERAGE PRECIPITATION, Southern District, 1914.

(Difference of Total for month from monthly average for previous ten years or more.)

| Locality. | No. Years Records | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-------------------------|-------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vancouver..... | 14 | 2-38 | -1-91 | -1-15 | 1-14 | 2-74 | 0-77 | -1-20 | -1-04 | 2-54 | 0-63 | -1-27 | -4-72 | -6-57 |
| Steveston..... | 17 | 2-92 | -1-79 | -1-00 | 0-58 | -1-73 | 0-55 | -0-81 | -0-77 | 1-12 | 1-06 | -0-87 | -2-72 | -3-46 |
| Ladner..... | 14 | 0-66 | -0-60 | -1-11 | 0-16 | -1-87 | 0-24 | -0-78 | -0-95 | -0-11 | -1-51 | 0-19 | -3-95 | -9-95 |
| Buntzen lake..... | | | | | | | | | | | | | | -14-1 |
| Cocuitlam lake..... | | | | | | | | | | | | | | -25-8 |
| Coquitlam Junction..... | | | | | | | | | | | | | | |
| New Westminster..... | 27 | 1-38 | -0-32 | -1-26 | 0-63 | -1-18 | 0-98 | -0-75 | -1-28 | 1-94 | 0-22 | 1-82 | -5-57 | -3-39 |
| North Nicomen..... | 21 | 8-25 | -3-89 | -0-95 | 0-24 | -1-95 | -0-99 | -1-86 | -1-75 | 3-52 | -1-02 | 0-42 | -6-97 | -6-95 |
| Agassiz..... | 24 | 7-16 | -1-56 | -1-89 | -1-23 | -0-96 | 0-36 | -2-15 | -2-15 | 1-63 | 1-73 | 5-81 | -6-84 | -0-09 |
| Chilliwack..... | 11 | 6-16 | -3-10 | 0-06 | 0-23 | -1-72 | 0-00 | -1-56 | -1-65 | 2-25 | -1-22 | 0-53 | -6-63 | -6-95 |

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE FROM AVERAGE TEMPERATURE, Southern District, 1914.

(Difference of Average for month from monthly average for previous ten years or more.)

| Locality. | No. Years Records | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|----------------------|-------------------|------|------|------|------|------|-------|-------|------|-------|------|------|------|-------|
| Vancouver..... | 14 | 3-0 | 0-3 | 2-8 | 1-6 | 2-8 | 1-0 | 0-4 | 0-3 | -0-9 | 3-1 | 2-2 | -2-5 | -14-1 |
| Steveston..... | 19 | 4-8 | -0-3 | 1-9 | 1-3 | 0-8 | 0-5 | -3-3 | -0-4 | 0-1 | 2-6 | 1-6 | -4-8 | -11-4 |
| Ladner..... | 14 | 9-6 | 1-3 | 3-5 | 3-5 | 2-5 | -0-4 | 1-0 | 1-3 | 1-3 | 5-0 | 1-4 | -4-0 | -23-4 |
| New Westminster..... | 27 | 2-2 | -0-4 | 1-8 | 2-2 | 3-2 | 0-1 | 1-6 | 1-0 | -1-7 | 3-7 | 1-6 | -2-5 | -12-8 |
| North Nicomen..... | 21 | 3-7 | 0-6 | 3-4 | 3-2 | 3-8 | 0-9 | 0-1 | 1-0 | 2-5 | 3-2 | 1-1 | -3-9 | -14-6 |
| Agassiz..... | 24 | 3-6 | 1-8 | 1-0 | 5-1 | 2-1 | -1-8 | -1-9 | -0-3 | -2-6 | -0-4 | 1-5 | -2-0 | -6-1 |
| Chilliwack..... | 11 | 6-7 | -0-2 | 2-6 | 1-4 | -0-4 | -1-1 | -0-9 | -1-5 | -2-2 | 1-5 | 2-0 | -3-2 | -4-7 |

N.B.—All quantities are plus unless otherwise designated.

COMPARISON OF MONTHLY DISCHARGES, Southern District, 1914.

| Locality. | Year. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Mean. |
|------------------------|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Coquihalla river..... | 1912 | 942 | 981 | 415 | 884 | 2,662 | 2,059 | 799 | 460 | 365 | 471 | 1,004 | 587 | 969 |
| | 1913 | 557 | 592 | 391 | 1,195 | 3,330 | 3,961 | 1,705 | 580 | 1,000 | 1,665 | 1,248 | 719 | 1,412 |
| | 1914 | 1,350 | 560 | 1,560 | 2,850 | 3,980 | 2,630 | 720 | 279 | 444 | 345 | 1,460 | 674 | 1,405 |
| Chilliwack river... | 1912 | 1,518 | 1,870 | 865 | 980 | 4,581 | 6,387 | 3,089 | 1,386 | 956 | 893 | 2,347 | 1,232 | 2,175 |
| | 1913 | 1,208 | 1,942 | 1,064 | 1,557 | 4,416 | 4,779 | 5,724 | 2,303 | 2,664 | 2,770 | 2,533 | 1,857 | 2,710 |
| | 1914 | 4,280 | 1,170 | 2,250 | 3,110 | 4,170 | 4,000 | 3,140 | 1,320 | 1,310 | 1,510 | 3,080 | 1,340 | 2,560 |
| Chehalis river..... | 1912 | | | 248 | 425 | 904 | 760 | 386 | 310 | 390 | 631 | 2,127 | 999 | |
| | 1913 | 551 | 1,350 | 1,080 | 1,465 | 2,460 | 1,693 | 916 | 441 | 1,011 | 1,765 | 3,295 | 1,615 | 1,467 |
| | 1914 | 4,230 | 1,570 | 3,800 | 3,610 | 1,980 | 1,130 | 690 | 270 | 990 | 2,040 | 4,480 | 730 | 2,130 |
| Fraser river..... | 1912 | | | 16,150 | 40,720 | 150,000 | 186,000 | 136,000 | 113,000 | 70,170 | 53,000 | 39,300 | 27,800 | |
| | 1913 | 17,800 | 25,300 | 19,000 | 34,400 | 82,300 | 306,800 | 201,000 | 177,000 | 113,900 | 60,500 | 77,200 | 27,000 | 92,150 |
| | 1914 | 39,500 | 29,600 | 34,600 | 72,800 | 187,000 | 243,600 | 216,000 | 119,000 | 76,000 | 70,800 | 64,300 | 41,100 | 99,500 |
| Jones creek..... | 1912 | 86 | 136 | 55 | 64 | 192 | 270 | 207 | 177 | 96 | 82 | 154 | 98 | 135 |
| | 1913 | 60 | 69 | 68 | 91 | 238 | 395 | 350 | 199 | 178 | 201 | 175 | 94 | 180 |
| | 1914 | 173 | 67 | 109 | 158 | 223 | 221 | 213 | 119 | 114 | 96 | 215 | 71 | 148 |
| South Lillooet river.. | 1912 | 1,412 | 1,393 | 210 | 455 | 802 | 817 | 387 | 620 | 533 | 733 | 2,111 | 1,062 | 872 |
| | 1913 | 593 | 1,180 | 693 | 872 | 1,238 | 1,095 | 757 | 303 | 826 | 1,621 | 2,608 | 908 | 954 |
| | 1914 | 1,450 | 632 | 1,040 | 1,030 | 594 | 367 | 161 | 108 | 656 | 1,216 | 2,288 | 387 | 818 |

6 GEORGE V, A. 1916

TOTAL MONTHLY PRECIPITATION, Lillooet District, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-------------------------------|-------|------|------|------|------|-------|-------|------|-------|------|------|------|-------|
| Pemberton hatchery..... | 5-85 | 1-51 | 2-81 | 2-34 | 1-58 | 1-57 | 0-34 | 0-41 | 5-41 | 4-35 | 8-44 | 0-98 | 35-32 |
| Pemberton Meadows..... | 10-73 | 2-28 | 3-03 | 2-46 | 0-76 | 1-35 | 0-28 | 0-08 | 4-63 | 5-46 | 9-23 | 1-65 | 41-99 |
| 15-mile ranch (Pavilion)..... | 1-40 | 0-46 | 0-39 | 0-24 | 0-89 | 1-18 | 0-44 | 0-10 | 1-92 | 0-37 | 2-50 | 0-45 | 10-54 |

MEAN MONTHLY TEMPERATURE, Lillooet District, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-------------------------------|------|------|------|------|------|-------|-------|------|-------|------|------|------|-------|
| Pemberton hatchery..... | 30-4 | 30-4 | 39-4 | 48-5 | 54-7 | 58-7 | 64-9 | 64-8 | 53-4 | 48-4 | 37-0 | 27-3 | 46-5 |
| Pemberton Meadows..... | 27-9 | 27-2 | 37-5 | 47-6 | 56-2 | 59-9 | 64-4 | 62-3 | 53-6 | 49-1 | 36-3 | 20-8 | 45-2 |
| 15-mile ranch (Pavilion)..... | 24-6 | 24-2 | 39-3 | 50-3 | 57-1 | 60-9 | 69-7 | 69-3 | 55-2 | 48-6 | 34-8 | 18-8 | 46-0 |

TOTAL MONTHLY PRECIPITATION, Vancouver Island District, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Victoria..... | 8-47 | 1-56 | 2-05 | 1-04 | 0-18 | 1-67 | ..... | 0-18 | 1-98 | 2-58 | 5-83 | 0-59 | ..... |
| Sooke..... | 14-22 | 3-60 | ..... | 2-65 | 0-58 | 2-93 | 0-06 | 0-36 | 3-42 | 6-22 | 9-48 | 1-42 | ..... |
| Shawnigan lake..... | 13-29 | 2-42 | 2-99 | 2-31 | 0-88 | 2-61 | 0-11 | 0-10 | 3-16 | 5-18 | 8-22 | 1-75 | 43-02 |
| Cobble Hill..... | 11-32 | 1-99 | 1-93 | 2-33 | 0-36 | 2-08 | 0-11 | 0-15 | 2-72 | 4-40 | 8-73 | 1-02 | 37-14 |
| Cowichan (Tzouhalem)..... | 13-04 | 2-35 | 2-08 | 2-78 | 0-31 | 2-29 | 0-15 | 0-26 | 3-40 | 5-15 | 9-40 | 1-53 | 42-74 |
| Ladysmith..... | 17-34 | 4-40 | 2-55 | 3-85 | 0-31 | 2-11 | 0-38 | 0-07 | 4-48 | 10-26 | 10-71 | 1-69 | 58-15 |
| Nanaimo..... | 10-89 | 2-60 | 2-54 | 2-60 | 0-16 | 1-70 | 0-10 | 0-33 | 4-03 | 6-13 | 7-62 | 2-16 | 40-86 |
| Nanoose bay..... | 9-17 | 2-26 | 2-60 | 2-60 | 0-14 | 3-15 | 0-16 | 0-25 | 4-61 | 6-12 | 7-36 | 1-44 | 39-86 |
| Campbell beach..... | 7-75 | 2-38 | 2-34 | 2-88 | 0-39 | 2-41 | 0-28 | 0-34 | 4-77 | 8-01 | 7-15 | 1-07 | 39-77 |
| Campbell lake..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3-90 | 8-42 | 13-29 | ..... | ..... |
| Alberni..... | 16-29 | 5-72 | 8-14 | 7-07 | 1-07 | 3-64 | 0-31 | 0-17 | 7-08 | 16-08 | 14-18 | 2-51 | 82-26 |
| Alert bay..... | 6-13 | 3-84 | 5-00 | 3-60 | 1-04 | 0-86 | 1-25 | 1-00 | 4-00 | 6-88 | 9-42 | 2-74 | 45-76 |
| Clayoquot..... | 21-55 | 11-59 | 13-72 | 14-08 | 2-65 | 3-08 | 1-05 | 1-66 | 9-11 | 19-44 | 24-35 | 7-44 | 129-72 |
| Quatsino..... | 18-46 | 5-76 | 12-42 | 9-36 | 3-83 | 1-34 | 0-74 | 1-05 | ..... | 14-51 | 17-35 | ..... | ..... |
| Holberg..... | 23-89 | 9-57 | 17-94 | 11-80 | 7-15 | 2-06 | 3-50 | 2-66 | 6-97 | 19-56 | 26-47 | 5-57 | 137-14 |

MEAN MONTHLY TEMPERATURE, Vancouver Island District, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|
| Victoria..... | 42-1 | 42-0 | 46-9 | 50-5 | 55-9 | 55-9 | 59-7 | 59-5 | 53-6 | 52-7 | 45-0 | 39-6 | 50-2 |
| Sooke..... | 39-7 | 41-0 | ..... | 48-6 | 53-4 | 55-2 | 59-6 | 59-5 | 58-9 | 52-2 | 44-2 | 38-3 | ..... |
| Shawnigan lake..... | 37-0 | 37-8 | 43-6 | 48-7 | 55-5 | 57-8 | 69-2 | 64-1 | 54-1 | 50-6 | 40-9 | 33-9 | 49-4 |
| Cobble Hill..... | 38-8 | 38-1 | 43-5 | 47-9 | 54-4 | 56-5 | 60-5 | 59-0 | 53-2 | 55-4 | 42-6 | 36-2 | 48-8 |
| Cowichan (Tzouhalem)..... | 40-2 | 39-8 | 45-4 | 50-0 | 55-5 | 58-7 | 63-9 | 62-4 | 55-4 | 50-1 | 43-8 | 36-0 | 50-1 |
| Ladysmith..... | 37-7 | 37-6 | 44-4 | 49-6 | 56-0 | 57-8 | 62-6 | 62-7 | 54-1 | 51-7 | 41-8 | 35-3 | 49-3 |
| Nanaimo..... | 39-8 | 39-6 | 44-7 | 49-6 | 57-0 | 58-8 | 64-4 | 63-7 | 54-7 | 51-8 | 43-6 | 36-9 | 50-3 |
| Nanoose bay..... | 38-0 | 38-1 | 43-4 | 48-3 | 54-4 | 56-9 | 62-5 | 61-7 | 50-7 | 50-8 | 42-1 | 35-2 | 48-5 |
| Campbell beach..... | 37-1 | 36-4 | 42-1 | 46-8 | 53-5 | 56-6 | 62-4 | 61-3 | 52-9 | 50-3 | 40-5 | 32-1 | 47-7 |
| Campbell lake..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 53-1 | 50-6 | 40-8 | ..... | ..... |
| Alberni..... | 36-1 | 37-1 | 44-2 | 49-4 | 54-3 | 57-7 | 63-6 | 66-9 | 55-5 | 53-0 | 42-6 | 34-4 | 49-5 |
| Alert bay..... | 38-4 | 42-3 | 45-1 | 50-4 | 53-0 | 54-6 | 57-2 | 57-9 | 53-4 | 53-8 | 45-3 | 38-1 | 49-1 |
| Clayoquot..... | 41-1 | 42-3 | 45-2 | 48-9 | 54-8 | 54-4 | 58-8 | 59-1 | 54-2 | 53-1 | 45-5 | 41-2 | 50-0 |
| Quatsino..... | 37-6 | 39-8 | 42-9 | 47-6 | 51-7 | 54-5 | 58-9 | 59-2 | ..... | 51-6 | 43-4 | 35-8 | ..... |
| Holberg..... | 37-8 | 39-7 | 43-6 | 47-7 | 52-8 | 54-1 | 58-5 | 61-4 | 54-8 | 54-2 | 44-7 | 36-2 | 48-8 |

SESSIONAL PAPER No. 25e

DIFFERENCE FROM AVERAGE PRECIPITATION, Vancouver Island District, 1914.

(Difference of Total for month from monthly average for previous ten years or more.)

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|
| Victoria..... | 3.93 | -2.01 | -0.14 | -0.76 | -1.17 | -0.71 | -0.35 | -0.41 | -0.12 | 0.32 | -0.24 | -5.68 | -7.34 |
| Nanaimo..... | 6.24 | -1.54 | -0.53 | 0.92 | -1.94 | -0.74 | -0.65 | -0.43 | 1.96 | 3.04 | -1.15 | -5.01 | 0.17 |
| Alberni..... | 6.29 | -2.62 | 2.56 | 2.51 | -1.89 | 1.27 | -0.66 | -0.97 | 3.99 | 10.34 | 1.79 | -8.11 | 14.50 |
| Clayoquot..... | 6.96 | -1.06 | 2.89 | 5.13 | -3.74 | -1.12 | -0.96 | -1.88 | 2.05 | 6.65 | 4.77 | -8.95 | 10.74 |
| Quatsino..... | 5.59 | -7.09 | 3.01 | ..... | -1.99 | -3.29 | -2.32 | -3.00 | ..... | 2.91 | 0.10 | -12.16 | ..... |

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE FROM AVERAGE TEMPERATURE, Vancouver Island District, 1914.

(Difference of Average for month from monthly average for previous ten years or more.)

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|----------------|------|------|------|-------|------|-------|-------|------|-------|------|------|------|-------|
| Victoria..... | 2.0 | 1.9 | 2.9 | 1.6 | 2.4 | -0.2 | -1.2 | -0.8 | -3.0 | 1.2 | -0.9 | -3.2 | 2.7 |
| Nanaimo..... | 4.0 | 2.0 | 2.8 | 3.1 | 3.9 | 1.1 | 1.3 | 0.3 | -2.4 | 2.3 | 0.4 | -2.3 | 16.5 |
| Alberni..... | 2.4 | -0.6 | 2.0 | 2.2 | -0.4 | -1.1 | -1.6 | 1.9 | -2.3 | 2.2 | 1.8 | -2.8 | 3.7 |
| Clayoquot..... | 1.6 | 1.5 | 2.7 | 3.3 | 4.0 | 1.1 | 0.6 | -0.6 | 1.4 | 2.3 | 0.4 | -1.0 | 15.7 |
| Quatsino..... | -2.3 | 1.8 | 1.1 | ..... | 0.3 | 1.1 | 1.4 | 1.4 | ..... | 3.2 | 1.2 | -4.5 | ..... |

N.B.—All quantities are plus unless otherwise designated.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 3

Kamloops Division

REPORT OF E. M. DANN, B.A.Sc., D.L.S.

Division Engineer.

CHAPTER III.

THE KAMLOOPS DIVISION.

TERRITORY.

The Kamloops division covers practically the whole of the great interior plateau lying between the Hope range of mountains in the vicinity of Lytton, and the Gold range near Revelstoke on the main line of the Canadian Pacific railway. Speaking broadly, the territory is drained by the Thompson river with its north and south branches; the former heading in the vicinity of the Yellowhead pass, the latter in Shuswap lake and its surrounding hills.

In addition to the vast catchment area of the Thompson, in whose valley flow some of the most important and contentious sources of water supply throughout the whole of British Columbia, the Kamloops division also covers a small portion of the Columbia River basin lying north of the international boundary, and drained by the Kettle, Similkameen, and Okanagan rivers.

The total area of the Kamloops division is 33,000 square miles.

USES OF WATER.

IRRIGATION.

The principal industry carried on throughout this division is agriculture in all its varied forms. Owing to the semi-arid nature of most of the country the principal need of water is for irrigation, and any other use to which it may be put is directly or indirectly, connected with that science. The community which uses hydro-electric power, for example, depends for its existence upon agriculture, and this could not be carried on without irrigation. Further, without irrigation there would be little demand for water for domestic and municipal supply.

Thus it will be seen that in the Kamloops division the great natural resource, water, is used pre-eminently for irrigation.

WATER-POWER DEVELOPMENT.

Most of the power derived from falling water is developed outside the most arid section of the division, although, notably in the instance of the Kamloops municipal plant on the Barrier river, power is sometimes transmitted through irrigation areas. A discussion of the hydro-electric plants in the Kamloops division has been made in other reports, although a short description of each is appended hereto.

WATER-POWER POSSIBILITIES.

The latest possibilities of water-power development within the division are many times more important than the development powers. It is doubtful if any stream in the province has as many splendid sites for future development as the Clearwater river and its principal tributary the Myrtle, a full description of which may be found in this report. (See "Hydrographic Data of Stream Flow," Clearwater and Myrtle rivers.) The power capacities of many other large streams are shown elsewhere in this report and in Water Resources Papers Nos. 1 and 8 published by the Dominion Water Power Branch.

There is, however, in the development by farmers and others, of power upon the smaller streams, a very great immediate future. The rational handling of irrigation water may enable a rancher to operate a small plant, producing sufficient power at a very low cost for his farm needs. Power to light house and barns, power for cooking purposes, power for wood-sawing and for a hundred and one necessities, lies at many a door, and is capable of very cheap and efficient development.

MUNICIPAL SUPPLY.

In every large centre of the province the intelligent selection of a source of municipal water supply is of vast importance. The supply must be pure, in the broad sense of that word, and regular. In this particular area, as in fact throughout the whole of British Columbia, little trouble arises from impurity of supply, and our mountain streams carry, generally speaking, a quality of water ideal for domestic use. The quantity therefore is that which is of particular interest to the public at large, and throughout the division studies are being commenced of streams where a knowledge of the amount of water is of much importance in this relation.

TOPOGRAPHY OF THE KAMLOOPS DIVISION.

The wide valley of the Thompson is bordered on either side by bench lands and table-like plateaus at the lower elevations, through which the erosive effect of surface run-off has literally cut hundreds of deep gulches. The appearance of the surface soil in midsummer is barren and uninviting save where irrigation water has painted an oasis of verdant green. To get the best idea of the topography of the area of which Kamloops is the centre, and to realize to what extent it is in fact a plateau, one must view it from a mountain top. Mount Tod (7,000 feet) is the highest peak in this part of the division. From it one may see gentle sloping and park-like tablelands cut by small streams whose waters, shaded from the sun by a covering of willows, seek their way to the larger arteries of flow in the bottom valleys. To the west the mountains of the Hope range; to the east the Gold range—the wardens of the Selkirks—reach out to the sky, snow-capped; while between, stretches this splendid plateau like the deck of a vast suspension bridge hanging between mighty towers.

Of similar topography are the Okanagan and Kettle River valleys.

The Similkameen valley presents a marked contrast to the country just described. Here the hills rise steeply on either side of the river to a height of 5,000 and 6,000 feet above the sea. They are well covered with timber, particularly on their northern slopes and, except in the bottom lands where some irrigation is required, there is very little agriculture carried on.

PRECIPITATION AND CLIMATE.

Precipitation and climate are very closely related, and both are to a large extent dependent on topography. With increasing altitude we have lower temperature and higher precipitation. The remarkably small precipitation in the Kamloops division is due to the fact that there are no high mountains to cause condensation of the moisture laden winds from the Pacific.

Tables are to be seen elsewhere in this report showing the precipitation and temperatures for certain meteorological stations in the province for each month; the variation from the average is also tabulated for those stations where records are available for a sufficiently long period to render these average figures of some value.

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It is well to bear in mind while scanning these records, that in general these stations are located in centres of population which are as a rule at low altitudes. This means that for any considerable area the mean monthly precipitation is greater, and the mean monthly temperature less, than the figures given for the centre of population for that area.

The greater part of the Kamloops division lies within the dry belt, where the mean annual precipitation varies from a minimum of 5 inches per annum near Ashcroft to a maximum of probably 35 or 40 inches at the highest altitude in the section. Outside the dry belt, however, on some of the higher elevations of the clearwater drainage basin in the north, and the peaks of the Hope and Hagameen ranges which feed the Tulameen and South Similkameen rivers, the precipitation is thought to be over 50 inches, although no accurate records have been taken at these high points.

DISTRICTS AND STAFF.

For the purpose of organizing stream measurement work in a simple and systematic manner, the division has been split up into three arbitrary districts, the boundaries of which are largely determined by transportation routes. An assistant engineer is directly responsible for the maintenance of station equipment and of the acquirement of data on all streams of importance throughout the district.

KAMLOOPS DISTRICT.

The Kamloops district is such a large and important area, that in view of the establishment of many new stations on streams tributary to the North Thompson river it was found advisable to divide it into two sections with an assistant engineer in charge of each.

The section immediately around Kamloops was supervised by Mr. C. B. Corbould, B.A.Sc., Assistant Engineer, and included the many contentious irrigation streams in the vicinity of Kamloops, Grand Prairie and Mamit lake. The vast importance of irrigation interests in this country, and the thorough knowledge of stream flow necessary to intelligent development, warrants a much more complete investigation than, with the present assistance and funds available, it has been possible to give.

The suddenness of the freshet and its short duration, coupled with the fact that the peak occurs simultaneously on widely separated streams, renders the work exceedingly difficult in this section.

Work in the North Thompson section was supervised by Mr. E. H. Trederoft, C.E., Assistant Engineer, and a desultory train service on the newly built Canadian Northern Pacific railway, rendered the streams more accessible than hitherto. Stations were established on the North Thompson river (above its confluence with the Clearwater), on Raft river, on Myrtle river and on Boulder, Whitewood, Fishtrap, and Little Clearwater creeks. In the early spring a cable station was built on the Clearwater river at Brookfield's ranch and hydrographic work was continued with good results.

Owing to its inaccessibility and the limited funds available, it was impracticable to rate the Myrtle river during 1914. Gauge readings were however commenced and a record of the flow during the latter part of 1914 will be developed when a rating curve is defined.

The importance of this district for the future production of water-power is very great, the wonderful Helmcken falls on the Myrtle river being the most important of many power sites in the Clearwater country. At this point the Myrtle river plunges headlong over a sheer cliff, 450 feet in height, to a rocky

canyon below, presenting a sight which will classify the Helmcken falls among the scenic beauties of the world. Its distance from the Canadian Northern Pacific main line at Mile 71, north of Kamloops, is about 40 miles. At present the only means of access is by pack trail (see photographs, and description of Myrtle river under "hydrographic data of stream flow").

THE ASHCROFT AND NICOLA DISTRICT.

The streams in the vicinity of Ashcroft are of inestimable importance, owing to the extreme aridity of the climate and the consequent higher "duty" of irrigation water. Hydrographic work was carried on throughout this section with Mr. Corbould as assistant engineer.

In the Nicola valley, Mr. K. G. Chisholm, B.Sc., Assistant Engineer, was in charge of field work. New stations were established on Spius creek and the Coldwater river, both of which are capable of power development.

THE OKANAGAN DISTRICT.

Acquisition of field data on streams of the southern Okanagan, of the Kettle valley, and of the Similkameen country was in the hands of Mr. Chisholm, and field work was vigorously carried on. Stations were established on the more important streams and in nearly all cases first-class rating curves were defined during the season. This section is of particular interest on account of the fact that its larger waterways are of an international character, the Kettle river, for example, crossing the United States boundary line three times.

In the Shuswap lake section, the tributary streams are only accessible by motor boat. It was possible to make but two trips around this section, so that very limited information is available about the outlying streams; gauge readings are being taken regularly, however, and records of flow will be published at a later date on such streams as Seymour river, which has latent power possibilities.

On the Adams river, another power stream of importance, an automatic, self-recording gauge was installed in October, 1914, by Mr. Trederoft, and has given good service, no trouble from ice conditions having been encountered. Owing to the artificial regulation of the flow of this stream at Adams lake, by the Adams River Lumber Co., and the sluicing operations which the company has carried on, the fluctuation in stage was erratic, and it was found impracticable to secure precise results through the services of a gauge reader.

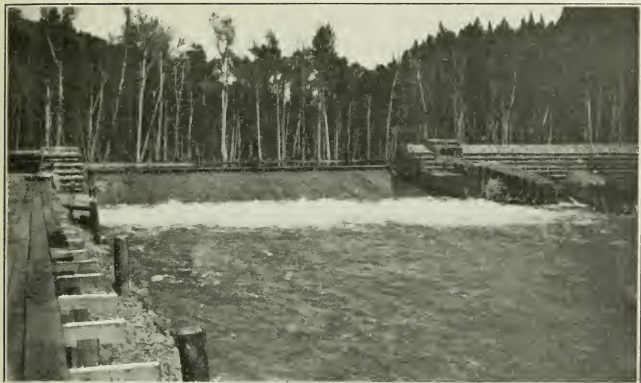
KAMLOOPS OFFICE.

Suitable office accommodation was procured in the Acadia block, Kamloops, where compilation, checking and plotting of field work is carried on. Unpublished data for the year are gladly compiled and made available for the public at any time. The division engineer visited and inspected most of the field stations in each district throughout the year, and kept constantly in touch with all gauge readers, supervising office work and assisting in the checking of field data. Miss B. B. Allan, as stenographer and office clerk, had charge of all filing, indexing, and gauge readers' returns.

INSPECTIONS.

In addition to actual stream flow work, all irrigation projects, involving Dominion Lands, within the Railway Belt of British Columbia, were inspected in co-operation with the Dominion Lands agent, by the division engineer at Kamloops. The construction of irrigation works in connection with such applications was supervised, and several surveys carried out in the field for the purpose of defining land covered by storage works and served by irrigation ditches.

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Dam, Barriere River Development, City of Kamloops.



Exterior Barriere Hydro-Electric Power House—Municipal plant for City of Kamloops, British Columbia.

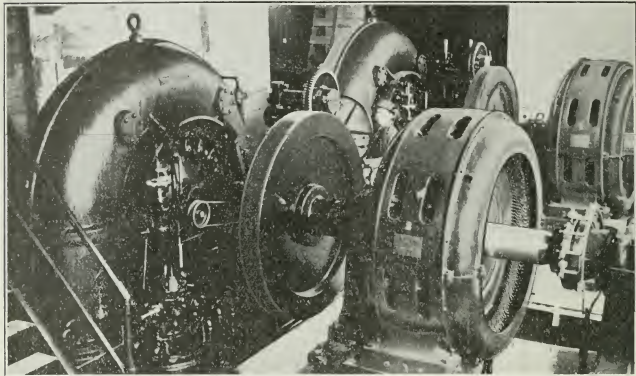
Photograph by courtesy of Messrs. Duane, Dutcher & Co., Consulting Engineers, Vancouver.

A timber flume (8' x 4') some three and a half miles long gives a concentrated head of 190 feet on the turbines. There are two penstocks of wood stave construction. The power house is of concrete.

DEVELOPED WATER-POWERS.

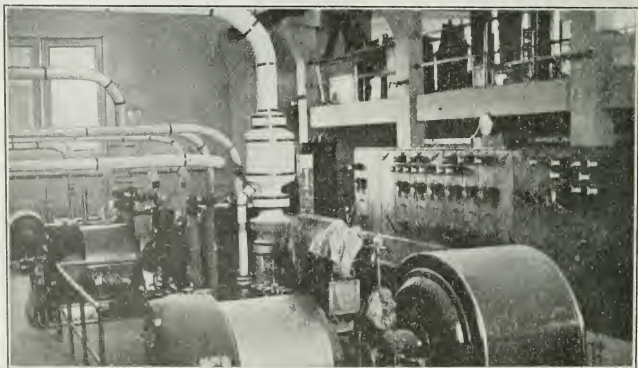
BARRIERE RIVER.

A 2,200 horse-power development has just been completed on the Barriere river, some 40 miles north of that city, by the municipality of Kamloops, with



Interior Barriere River Hydro-Electric Power House, Municipal plant for City of Kamloops. Photograph by courtesy of Messrs. Ducane, Dutcher & Co., Consulting Engineers, Vancouver.

The present development has two 1,100 H. P. Platt Iron Works Victor-Francis turbines operating under 190' head, with 750 K.V.A. Canadian Westinghouse Co. 2,200 volts, 3 phase 60 cycle generators (600 R.P.M.) with direct connected 40 K. W. Exciter.



Interior Sub-Station, City of Kamloops.

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Messrs. Ducane, Dutcher & Co., of Vancouver as engineers. A timber flume $3\frac{1}{2}$ miles long gives a concentrated head of 190 feet on the turbine, of which there are two of the Victor-Francis type. The penstocks are of wood stave, and are buried. The power-house is of concrete, and the plant itself is of exceptionally compact design.

An unfortunate landslide, such as British Columbian engineers are often called upon to deal with, has, at the time of writing, caused the plant to be temporarily shut down, a portion of the flume having settled with the slide. This matter is being adjusted and it is hoped the development will shortly be in operation again.

An auxiliary steam plant at Kamloops looks after the demand for power, during the winter period, when it is expected that the hydro-electric plant will be shut down for a period of six weeks to two months.

BOUNDARY CREEK.

There is a small hydro-electric development at Boundary falls, by which the city of Greenwood derives light and power. The plant operates under a head of 130 feet and has a capacity of 250 horse-power.

CRAZY CREEK.

At Taft, B.C., the Forest Mills of British Columbia, Ltd., has a small Pelton wheel development of 150 horse-power. Water is diverted through a 7-inch wood stave pipeline and operates under a head of about 150 feet. The power is used in connection with the sawmill as well as for fire protection, lighting, and domestic purposes.

FORTUNE OR DAVIS CREEK.

Near the city of Armstrong, B.C., on Fortune (or Davis) creek there is a small Pelton wheel development of about 200 horse-power, municipally owned, and used for lighting and power purposes. It operates under a head of 500 feet, water being carried from the storage reservoir by a pipeline, a distance of three-quarters of a mile to the power house. A transmission line carries power at 2,200 volts to the city of Armstrong.

KETTLE RIVER AT CASCADE.

The West Kootenay Power and Light Co., operates a plant on the Kettle river with a capacity of 3,900 horse-power under a head of 155 feet which is maintained in conjunction with the plants at Bonnington falls on the Kootenay river. Power is used at Grand Forks, Phoenix, and Nelson for lighting, and for the mines and smelters.

KETTLE RIVER (NORTH FORK).

A 700 horse-power plant operating under a 30-foot head is maintained and used by the Granby smelter near Grand Forks.

MURRAY CREEK.

A Pelton wheel development of 100 horse-power operating under a 220-foot head delivers light and power to the town of Spences Bridge. Water is taken to wheel direct from Murray creek in a 16-inch riveted steel pipe, the upper 175 feet of pipe being laid through a rock tunnel.

NAKALLISTON CREEK.

The Mount Olie Light and Power Plant develops some 30 horse-power from Nakalliston creek for the use of that settlement, which is about 50 miles north of Kamloops, B.C. Six hundred feet of 16-inch wood stave pipeline carries water to a small turbine acting under a 50-foot head.

SIMILKAMEEN RIVER.

The Daly Reduction Co., which owns and operates the well-known Nickel Plate Gold Mine at Hedley, B.C., has during 1914, completed the construction of a hydro-electric plant with a capacity of 1,800 horse-power. By means of a dam and a 3-mile wooden flume, a head of 67 feet is obtained. This installation superseded a plant on Twenty-mile creek, which proved of little service during low-water periods, and in conjunction with which an auxiliary steam plant had to be used

TOTAL Monthly Precipitation, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-------------------|------|------|-------|------|------|-------|-------|------|-------|------|------|------|-------|
| Kamloops | 1-68 | 2-18 | 0-26 | 0-38 | 1-31 | 0-54 | 0-53 | 0-38 | 1-09 | 0-79 | 1-01 | 0-58 | 10-73 |
| Monte creek | 0-84 | 2-08 | ..... | 0-15 | 0-60 | 1-09 | 0-98 | 0-38 | 1-20 | 0-76 | 1-00 | 0-78 | ..... |
| Salmon Arm | 3-08 | 1-36 | 0-87 | 1-27 | 1-36 | 1-34 | 0-73 | 0-19 | 2-17 | 1-54 | 3-02 | 1-55 | 18-48 |
| Vernon | 1-25 | 1-22 | 0-51 | 0-42 | 1-07 | 1-05 | 0-62 | 0-53 | 1-96 | 1-18 | 1-46 | 1-15 | 12-42 |
| Keremeos | 2-20 | 0-66 | 0-72 | 1-05 | 0-50 | 1-31 | 0-49 | 0-20 | 1-31 | 0-73 | 1-21 | 0-65 | 11-03 |
| Kelowna | 2-34 | 2-98 | 0-30 | 0-20 | 0-87 | 1-07 | 0-20 | 0-26 | 2-65 | 0-70 | 1-43 | 0-48 | 13-48 |
| Penticton | 2-13 | 0-49 | 0-46 | 1-26 | 1-22 | 1-24 | 0-35 | 0-31 | 2-16 | 0-81 | 1-25 | 0-76 | 12-44 |
| Princeton | 2-36 | 1-16 | 0-73 | 0-65 | 1-32 | 0-88 | 0-21 | 0-12 | 1-39 | 1-00 | 2-04 | 0-96 | 12-82 |

MEAN Monthly Temperature, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-------------------|------|------|-------|------|------|-------|-------|------|-------|------|------|------|-------|
| Kamloops | 29-8 | 25-2 | 39-9 | 51-6 | 58-0 | 63-9 | 70-9 | 68-7 | 56-5 | 49-9 | 37-7 | 21-5 | ..... |
| Monte creek | 32-1 | 23-8 | ..... | 49-0 | 51-9 | 62-2 | 69-0 | 60-0 | 52-8 | 47-1 | 35-8 | 18-8 | ..... |
| Salmon Arm | 30-2 | 26-2 | 37-9 | 48-7 | 55-1 | 61-4 | 67-0 | 64-8 | 54-0 | 47-5 | 37-2 | 23-2 | ..... |
| Vernon | 29-4 | 25-0 | 38-3 | 49-1 | 55-5 | 61-2 | 68-6 | 67-1 | 55-1 | 46-8 | 36-5 | 21-3 | ..... |
| Keremeos | 31-8 | 28-3 | 41-7 | 52-1 | 59-0 | 61-5 | 71-3 | 70-0 | 56-5 | 49-4 | 38-1 | 20-2 | ..... |
| Kelowna | 30-8 | 27-2 | 39-4 | 48-8 | 55-1 | 62-6 | 68-6 | 63-7 | 54-1 | 48-2 | 39-5 | 26-0 | ..... |
| Penticton | 34-3 | 30-4 | 41-0 | 50-3 | 56-4 | 62-2 | 69-6 | 67-8 | 56-2 | 49-8 | 40-3 | 26-1 | |
| Princeton | 24-5 | 23-9 | 35-5 | 46-8 | 52-6 | 56-9 | 64-6 | 62-1 | 51-4 | 45-5 | 33-6 | 15-6 | |

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DIFFERENCE from Average Precipitation, 1914.

(Difference of Total for month from Monthly Average for previous ten years or more.)

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Kamloops | 0.73 | 1.37 | -0.06 | 0.00 | 0.28 | -0.74 | -0.73 | -0.65 | 0.10 | 0.26 | -0.11 | -0.97 | -0.58 |
| Salmon Arm | 0.44 | 0.02 | 0.25 | 0.43 | 0.03 | -0.52 | ..... | -0.79 | 0.46 | 0.07 | ..... | -0.56 | ..... |
| Vernon | 0.09 | 1.10 | -0.15 | -0.08 | -0.21 | -0.60 | -0.68 | -0.83 | 0.58 | 0.39 | -0.03 | -0.12 | -0.54 |
| Kelowna | 0.88 | 1.76 | -0.29 | -0.98 | -0.21 | -0.33 | -0.86 | -0.77 | 1.48 | -0.15 | 0.56 | -0.90 | -0.93 |
| Princeton | 1.05 | 0.16 | 0.13 | 0.11 | -0.02 | -0.17 | -0.89 | -0.82 | 0.34 | 0.17 | 0.17 | -0.38 | -0.15 |

N.B.—All quantities are plus unless otherwise designated.

DIFFERENCE from Average Temperature, 1914.

(Difference of Average for month from Monthly Average for previous ten years or more.)

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|------------------|------|------|------|------|------|-------|-------|------|-------|------|-------|------|-------|
| Kamloops | 5.1 | -2.6 | 2.2 | 1.7 | -0.4 | 0.1 | 1.2 | 0.6 | 1.9 | 1.4 | 2.7 | -7.3 | 6.6 |
| Salmon Arm | 11.4 | 0.4 | 2.9 | 3.0 | -2.3 | 1.7 | ..... | 1.3 | -1.9 | 4.2 | ..... | -5.9 | ..... |
| Vernon | 7.8 | -0.8 | 2.9 | 2.5 | 1.0 | 0.8 | 2.3 | 2.0 | 0.1 | 1.5 | 2.5 | -6.5 | 16.1 |
| Kelowna | 5.2 | 1.5 | 2.7 | 2.1 | -0.3 | 3.1 | 2.1 | 0.0 | -0.7 | 3.4 | 3.1 | -4.3 | 17.9 |
| Princeton | 7.7 | 0.7 | 2.9 | 2.6 | 0.7 | 0.3 | 1.7 | 0.8 | -1.7 | 2.1 | 2.6 | -6.7 | 13.7 |

N.B.—All quantities are plus unless otherwise designated.

RÉPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 4

Nelson Division

REPORT OF C. E. RICHARDSON, B.A.Sc., D.L.S.

Division Engineer.

CHAPTER IV.

NELSON DIVISION.

GENERAL REMARKS.

Mr. J. C. Hoyt, M. Am. Soc., C.E., Hydraulic Engineer in charge Division of Surface Waters, United States Geological Survey, and Mr. N. C. Grover, Chief Engineer United States Geological Survey, in their book on "River Discharge", makes the following statement:—

The hydraulic engineer is interested in water from the time it reaches the earth in the form of rain or snow until it returns again to the atmosphere in the form of an invisible vapour.

The magnitude of this statement reveals the immense amount of data that the hydraulic engineer must collect in an endeavour to determine the most economical method of procedure with his work. The statement that each stream is a law unto itself is particularly true in the Nelson Division.

NELSON DIVISION.

The Nelson division comprises that part of British Columbia known as East and West Kootenay districts. The whole division is drained by Columbia river, and with the exception of Okanagan and Kettle rivers, comprises the total drainage of the Columbia in Canada. The East and West Kootenays are divided by Selkirk range of the Rockies, and the Selkirks are encompassed on the north, south, east, and west by Columbia river and one of its tributaries, the Kootenay. The Columbia rises in Columbia and Windermere lakes, 90 miles south of the C.P.R. main line at Golden, and flows in a northwesterly direction for about 200 miles to the mouth of Canoe river at Big Bend. From Canoe river the Columbia flows practically south for about 250 miles, past Revelstoke, through Arrow lakes, crossing the international boundary near Waneta, B.C. Kootenay river rises in Beaverfoot range of the Rockies, about 20 miles south of the C.P.R. main line at Palliser, B.C., and flows practically south for 175 miles, passing within 1 mile of Columbia lake, and crossing the international boundary near Newgate, B.C. It flows through Montana into Idaho, U.S.A., re-entering British Columbia (West Kootenay district), 60 miles west of Newgate and 20 miles south of Kootenay Landing, at which point it loses itself in Kootenay lake. From the west arm of Kootenay lake the river flows in a southwesterly direction, discharging in Columbia river near Castlegar, about 20 miles north of the international boundary.

The total area of the Nelson Division (East and West Kootenay), is approximately 29,000 square miles. Of this some 15,000 square miles are drained by the Columbia river above the mouth of the Kootenay. The Kootenay river drains approximately 13,000 square miles in British Columbia. The remaining 1,000 square miles are drained by Pend d'Oreille river, of which Flathead river in southeast Kootenay is a tributary; the Pend d'Oreille discharges into Columbia river near Waneta, 200 yards above the International boundary.

CLIMATIC CONDITIONS.

Run-off is relative directly to topography and climatic conditions. Climatic conditions are themselves partially dependent on topography. In the study of stream flow it is essential to be familiar with these two factors. The topogra-

phy, however, remains a constant factor, and the variation in the flow of streams is due directly to climatic conditions. In the opening paragraphs of the report the following remark was made:—"The statement that each stream is a law unto itself is particularly true in the Kootenays." This statement is based on the fact that in the Kootenays there is a greater variation in climatic conditions, even within a radius of a very few miles. It is impossible, therefore, to describe the climatic conditions in a general way and consider them for any one locality. Although there is no direct relation between the various localities, there are marked variations between some of the districts. The following tables and remarks are intended to show these striking variations, and in comparison with them a general resemblance may be seen between other districts.

The attached tables of precipitation for various points in the Kootenays are compiled from the monthly reports for 1914 of the Meteorological Survey, Mr. R. F. Stupart director. One table shows the monthly precipitation, while the other shows the difference from the average for the past ten years or more.

In these tables a comparison is shown between ten points, five in East Kootenay and five in West Kootenay, for 1914. Of these ten points, eight are in the valleys of the Columbia and Kootenay rivers. Glacier in West Kootenay and Fernie in East Kootenay are near the summits of the Selkirks and Rockies, respectively. Although marked variations may be noted in this table, it also shows conclusively that the precipitation in West Kootenay is much greater than in East Kootenay.

The cause of the variation in precipitation at these points may be partially explained as follows:—

Practically all the precipitation which falls in the Kootenays comes from the west. The moisture laden clouds coming from the Pacific first hit the heavily-timbered Coast range. The result is that on the west slope of the Coast range the precipitation is very heavy. These clouds then pass over the rolling hills in the central division of Yale district. The precipitation there is so light that the country is semi-arid. Gold range is only high enough to reach the lower clouds, and the precipitation on the west slope of Gold range is not very heavy though considerably greater than around Kamloops. After the Gold range comes the Selkirks. The Selkirks, particularly in the north half of the Kootenays, are high and heavily timbered. They reach well into the moisture laden clouds and the result is a heavy precipitat on on the west slope or in West Kootenay. The lower clouds have been precipitated by the Selkirks, and hence when the Rockies are reached by the remaining clouds a smaller per cent will be affected. Thus the precipitation in East Kootenay will be less. This is correct for the northern part of the Kootenays. In the south, however, the Rockies are higher than the Selkirks, and around Fernie the precipitation is very heavy. To offset this, the Valley of the Kootenay in this vicinity is wide, and around Cranbrook the precipitation is very light.

A comparison of East and West Kootenay has just been made. It might be interesting to compare the precipitation in the Kootenays along the Columbia and Kootenay valleys from south to north. In East Kootenay from Elko to the Windermere country, the precipitation is about the same. Proceeding north from Windermere (Wilmer on table), the precipitation in the Columbia valley increases slightly to Spillimacheen. From there to Golden it is fairly constant. From Golden north the precipitation gradually increases till within a few miles of the Big Bend. Captain Armstrong, a member of the Public Works Department (Canada) at Nelson, and a man well informed on the Kootenays, made the following statement:—

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PRECIPITATION.

It was early in May, 1894. Proceeding north from Golden the snow became gradually deeper. At Kimbasket lake it was about 4 feet deep and well packed. Past Kimbasket lake the depth of snow still increased, till we came to a point immediately below the mouth of Wood river. Within a distance of a quarter of a mile there was a pronounced change, from 8 feet of snow to green grass. The lower valley of Canoe river appeared very dry. Jack pine was present.

Captain Armstrong accounted for this change by the fact that the Selkirks had practically disappeared, and the mountains to the east, west, and north were not high, and the moisture-laden clouds were not penetrated until about Wood river. It is possible, however, that this sudden change might have been produced by Chinook winds.

CHINOOK WINDS.

Captain Armstrong also gave a very interesting description of the Chinook winds in East Kootenay. They come from the south, up Kootenay valley, and touch Tobacco plains near Newgate at the international boundary. From Tobacco plains they appear to rise and are not apparent again till in the vicinity of Columbia lake, the source of Columbia river. Their effect is noticed very much around Windermere lake and at the mouth of Toby creek. In January, 1901, in the valley around Windermere lake the thermometer reached 65° F., and the snow all disappeared. Toby creek valley was affected till an altitude of about 5,000 feet was reached, the height of the Chinook clouds. Above 5,000 feet there was not any effect from the Chinook. When the temperature in the valley was as high as 65° F. at the Paradise mine on Toby creek, 8,000 feet altitude, the thermometer ranged from -20° F. to -26° F. day and night. North of Toby creek the Chinook appears to lift or die out, and is not again very evident.

In West Kootenay the precipitation seems rather similar in the valley at most points as far north as Nakusp. Farther north, however, it increases considerably.

SNOWFALL DATA ALONG THE C.P.R. IN SELKIRK RANGE.

The C.P.R. have kept snowfall records each year since 1887 at various points along the main line in the Selkirks. The following table is taken from these records, and shows the annual snowfall in feet and inches. The location of the points at which records were taken is denoted by the number of miles and direction from Roger pass, the summit of the Selkirks

SNOWFALL TABLE.

| Date. | Revel- stoke 35 M. SW. | Laurie tunnel 12 S.W. | Cambie 3½ S.W. | Glacier 2½ S. | 22 Shed 2½ S. | 18 Shed 1½ S. | 14 Shed 1 N.E. | Cu. band. |
|-----------|------------------------------|-----------------------------|-------------------|------------------|------------------|------------------|-------------------|--------------|
| | Ft. Ins. | Ft. Ins. | Ft. Ins. | Ft. Ins. | Ft. Ins. | Ft. Ins. | Ft. Ins. | Ft. Ins. |
| 1888-9 | | | | | | 28 0 | | 14 8 |
| 1889-90 | | | | | | 33 3 | | 20 9 |
| 1890-91 | | | | | | | | 17 6 |
| 1891-92 | | | | | | 36 3 | | 21 0 |
| 1892-93 | | | | | | 38 10 | | 23 11 |
| 1893-94 | | | | 43 4 | | | | 23 9 |
| 1894-95 | | | | 28 11 | | | | 16 4 |
| 1895-96 | | | | | | | | 27 8 |
| 1896-97 | | | | 34 11 | | | | |
| 1897-98 | | | | 27 6 | | | | |
| 1898-99 | | | | 43 2 | | | | 18 11 |
| 1899-1900 | | | | 26 9 | | | | 18 10 |
| 1900-01 | | | | 32 1 | | 34 11 | | 17 10 |
| 1901-02 | | | | 28 6 | | 35 3 | | 19 3 |
| 1902-03 | | | | 32 0 | | 28 9 | | 22 11 |
| 1903-04 | | | | 31 11 | | 46 8 | | 24 1 |
| 1904-05 | | | | 16 7 | | 17 0 | | 17 0 |
| 1905-06 | 4 9 | | | 15 4 | | 15 5 | | 13 10 |
| 1906-07 | 11 2 | | | 39 8 | | 28 7 | | 18 10 |
| 1907-08 | 8 4 | 24 4 | | 37 11 | 26 6 | 31 8 | | 20 5 |
| 1908-09 | 12 9 | | | 34 0 | 29 10 | 30 11 | | 23 5 |
| 1909-10 | 11 5 | 25 2 | | 36 9 | 32 1 | 32 2 | | 29 5 |
| 1910-11 | 15 8 | 24 7 | | 40 7 | 36 8 | 39 2 | | 21 7 |
| 1911-12 | 11 2 | 21 2 | | 32 7 | 33 2 | 32 5 | | 15 9 |
| 1912-13 | 15 10 | 27 1 | 41 5 | 45 1 | 47 2 | 44 11 | 37 4 | 23 8 |
| 1913-14 | 11 7 | 21 6 | 33 0 | 35 0 | | 35 11 | | 23 10 |

TEMPERATURE.

The attached tables show the average monthly temperature for the same localities for which the precipitation tables were compiled. The variation from the average for the past ten years for each month is also shown.

It may be seen from this table, that in the valleys, the temperature in East Kootenay is lower than in West Kootenay. There is no doubt that variation in elevation has a great deal to do with variation in temperature. It has been stated on good authority that at high elevations, such as 7,000 or 8,000 feet in the Rockies near Golden, there is much less variation in temperature than there is at Golden (2,500). During cold spells at Golden the temperature will be lower than at a point 4,500 or 5,500 feet above. At other times the temperature is lower for the higher elevation. Insufficient study has been carried on to go more deeply into this interesting problem.

CO-OPERATION.

Before the advent of the British Columbia Hydrographic Survey in the Kootenays considerable amount of work had been done by the Railway Belt Hydrographic Survey in the Railway Belt; and by the Provincial Water Rights Branch in other parts of the division.

The Provincial Water Rights Branch has three district engineers in the Nelson division. Mr. H. B. Hicks in Cranbrook district, Mr. W. J. E. Biker in Nelson district, and Mr. O. J. Bergoust in Revelstoke district. These engineers have given their earnest co-operation in obtaining data on many streams in this division.

HYDROGRAPHIC DISTRICTS.

At the opening of the 1914 season (April) the staff of the Nelson division consisted of a division engineer, two assistant engineers, and an office assistant. The division was divided into three districts, Mr. Gill was put in charge of the

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Cranbrook district, Mr. Elliott in charge of the Revelstoke district, while Mr. Beeston and the division engineer both attended to the Nelson district. Many new stations were established during the spring and early summer. Owing to the loss of one of the staff in August the work was considerably curtailed for the rest of the year, with the result that it was impossible to obtain discharge curves for all the streams in the division. Another year's work, however, will make it possible to rate all these stations.

PROBLEM OF TRANSPORTATION.

Owing to the size of the Nelson division and the varying nature of the country, the problem of transportation is of vital importance. The streams in



Cranbrook District (H)—Photograph showing support for cable way and platform attachment for cable car.

the vicinity of Nelson are reached, for the most part, by boat. In the Upper Columbia valley and Cranbrook districts, many of the streams are remote from the railroads; to cover these districts horses are of little use on account of the great distance to be covered in a trip, but by using an automobile of its own, this survey could greatly reduce the cost of the work in these two districts.



Cranbrook District (III).—Photograph showing cable car and method of operating.

WINTER MEASUREMENTS.

Winter measurements are absolutely essential on the majority of streams in the Nelson division. In East and North-west Kootenay the streams are frozen or affected by ice from November or December to March or April. In South-west Kootenay the streams seldom freeze over for more than a week or so at a time, and in the larger rivers ice conditions do not exist except during extremely cold spells.

There are two periods of low water in this division in the late summer or early fall, and during the winter. On all glacial fed streams and on a great many others low water occurs during the winter and renders winter measurements necessary.

It is not intended here to enter into a discussion on stream gauging under ice conditions, but, should any one be interested in this work, reference is made to United States Water Supply Paper No. 337, by Mr. W. G. Hoyt. In this paper the most advanced methods and theories are discussed.

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It is a much more difficult matter to obtain reliable measurements under ice conditions than during the open season, for the following reasons:—

(1) *The Personal Equation.*—Particularly during very cold weather it is a most uncomfortable undertaking. The engineer should be supplied with the warmest clothing outfit, such as shoepacks, etc., and several pairs of gloves.

(2) *Frazil Ice.*—In the Kootenays when ice conditions exist, frazil ice is generally present. The best metering sections are always above a riffle, and these sections or parts of them are always packed with frazil ice. It is a hard proposition to determine if there is any water flowing through the ice and also the width of the channel free from this packed frazil ice. Again, when this ice is flowing downstream it is liable to affect the action of the meter.

(3) *Meter.*—During cold weather the meter is very liable to freeze when it is out of the water.

Needless to say, the cost of winter measurements is much in excess of the open season work. Transportation is more difficult, ice has to be chopped and the measurement takes much longer.

Not many winter measurements were made in 1914. Mr. Webb covered the streams in Revelstoke district in February. In Nelson district streams on which regular gauging stations were established were all metered at various times throughout the winter. The larger of these streams, such as the Kootenay, Pend d'Oreille, Columbia, and Slokan, did not freeze, so the open season curve was applicable for the whole year. In December, Messrs. Elliott and Corbould metered the power streams in Cranbrook district during a cold spell. All measurements were made in cold weather from 0°F to -20°F. Frazil ice was flowing in practically all the streams they metered and caused much trouble. The results, however, should be fairly reliable and are of value. It is an established fact that the run-off during the winter months varies with the temperature. In most years the low flow in the Kootenays occurs in February or March and, it is believed, takes place shortly after the last cold spell of the season. Particular attention will be paid to winter measurements during the latter part of February and early March in 1915.

TOTAL Monthly Precipitation, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-----------------|-------|------|------|------|------|-------|-------|------|-------|------|------|------|-------|
| Golden..... | 3.65 | 0.20 | 1.37 | 0.75 | 1.10 | 1.09 | 0.42 | 0.45 | 1.73 | 1.35 | 1.67 | 0.75 | 14.53 |
| Wilmer..... | 2.18 | 0.45 | 0.44 | 1.30 | 1.32 | 1.51 | 1.96 | 0.82 | 2.54 | 0.88 | 1.23 | 0.53 | 15.69 |
| Glacier..... | 10.45 | 4.95 | 9.00 | 4.25 | 2.93 | 3.37 | 1.86 | 0.88 | 3.33 | 2.55 | 9.10 | 3.55 | 56.22 |
| Revelstoke..... | 9.89 | 2.06 | 3.23 | 2.42 | 1.25 | 2.53 | 0.97 | 1.19 | 3.87 | 2.23 | 7.09 | 1.65 | 38.38 |
| Nakusp..... | 5.24 | 1.54 | 0.96 | 3.07 | 1.65 | 2.43 | 1.57 | 0.93 | 2.90 | 1.98 | 3.31 | 1.58 | 27.16 |
| Nelson..... | 6.10 | 1.00 | 1.58 | 3.07 | 1.95 | 2.56 | 1.05 | 0.24 | 3.44 | 1.85 | 4.03 | 0.70 | 27.57 |
| Waneta..... | 5.01 | 1.20 | 2.36 | 2.33 | 2.87 | 3.36 | 1.36 | 0.00 | 3.93 | 1.33 | 2.99 | 1.43 | 28.17 |
| Cranbrook..... | 3.63 | 0.15 | | 0.79 | 1.08 | 2.02 | 0.97 | 0.44 | 1.27 | 1.57 | 2.47 | 0.80 | |
| Elko..... | 1.91 | 0.50 | 1.66 | 1.48 | 2.01 | 2.74 | 0.90 | 1.62 | 1.39 | 2.45 | 2.08 | 0.80 | 18.94 |
| Fernie..... | 10.94 | 1.23 | 2.93 | 2.66 | 1.64 | 1.38 | 1.45 | 2.15 | 4.77 | 4.47 | 7.09 | 0.81 | 42.52 |

MEAN Monthly Temperature, 1914.

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-----------------|------|------|------|------|------|-------|-------|------|-------|------|------|------|-------|
| Golden..... | 20.5 | 20.1 | 30.8 | 44.4 | 50.5 | 56.7 | 63.4 | 59.5 | 50.5 | 43.4 | 30.3 | 8.4 | 39.9 |
| Wilmer..... | 22.6 | 20.4 | 32.0 | 43.6 | 50.9 | 56.6 | 64.4 | 61.1 | 50.8 | 41.4 | 30.9 | 11.4 | 40.5 |
| Glacier..... | 20.5 | 18.6 | 26.3 | 36.4 | 43.8 | 51.1 | 57.5 | 55.7 | 45.0 | 40.0 | 27.5 | 11.0 | 36.1 |
| Revelstoke..... | 27.8 | 24.8 | 33.9 | 44.9 | 53.5 | 58.6 | 65.1 | 62.4 | 52.7 | 45.2 | 35.4 | 18.8 | 43.5 |
| Nakusp..... | 33.9 | 26.7 | 35.0 | 45.3 | 52.5 | 56.1 | 64.0 | 61.2 | 50.5 | 44.5 | 36.3 | 22.3 | 44.0 |
| Nelson..... | 30.0 | 28.3 | 39.1 | 48.5 | 55.0 | 58.5 | 68.8 | 68.6 | 53.1 | 46.1 | 37.5 | 23.6 | 46.4 |
| Waneta..... | 29.0 | 25.1 | 37.3 | 47.1 | 53.5 | 58.0 | 67.8 | 66.6 | 52.1 | 45.4 | 35.4 | 18.5 | 44.7 |
| Cranbrook..... | 25.9 | 19.6 | | 46.0 | 52.4 | 57.5 | 64.5 | 61.5 | 51.9 | 43.4 | 34.8 | 10.4 | |
| Elko..... | 30.7 | 24.3 | 37.4 | 50.4 | 53.8 | 59.3 | 69.1 | 67.3 | 54.8 | 45.8 | 37.1 | 14.9 | 45.4 |
| Fernie..... | 25.7 | 18.6 | 31.4 | 42.7 | 49.6 | 55.3 | 62.9 | 59.7 | 49.1 | 42.1 | 53.4 | 11.8 | 40.2 |

DIFFERENCE from Average Precipitation, 1914

(Difference of Total for month from monthly Average for previous ten years or more.)

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-----------------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Golden..... | -2.36 | -0.68 | 0.48 | 0.19 | 0.21 | -0.55 | -0.95 | -1.18 | 0.08 | -1.12 | -1.00 | -0.78 | -7.14 |
| Glacier..... | 1.80 | -2.76 | 1.30 | 1.31 | 1.15 | 0.58 | -0.53 | -1.49 | -0.81 | -1.37 | 0.00 | -4.52 | -5.34 |
| Revelstoke..... | 4.35 | -2.62 | 0.50 | 0.47 | -0.97 | -0.56 | -1.62 | -1.21 | 0.51 | -1.88 | 1.40 | -2.91 | -6.54 |
| Nelson..... | 3.48 | 6.86 | -0.05 | 1.65 | -0.21 | -0.23 | -1.87 | -1.70 | 1.62 | -0.45 | 0.52 | -1.84 | 0.06 |
| Elko..... | 1.31 | -0.65 | -0.02 | 0.52 | -0.25 | 0.15 | -0.65 | 0.28 | 0.05 | 1.46 | 0.11 | -0.45 | 0.86 |

N. B.—All quantities are plus unless otherwise designated.

DIFFERENCE from Average Temperature, 1914.

(Difference of Average for month from Monthly Average for previous ten years or more.)

| Locality. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Year. |
|-----------------|------|------|------|------|------|-------|-------|------|-------|------|------|-------|-------|
| Golden..... | 11.8 | 1.2 | 1.3 | 2.8 | -0.8 | -0.3 | 2.1 | 1.3 | 0.8 | 3.0 | 1.9 | -10.5 | 14.6 |
| Glacier..... | 2.0 | 0.6 | 0.8 | 0.9 | -0.9 | -0.1 | 0.5 | 1.2 | -1.1 | 4.8 | 1.8 | -7.5 | 3.0 |
| Revelstoke..... | 7.3 | 2.1 | 1.0 | 1.7 | 1.5 | 0.2 | 2.1 | 1.1 | 0.2 | 2.2 | 1.1 | -8.1 | 12.0 |
| Nelson..... | -5.7 | -0.4 | 2.1 | 1.5 | 1.3 | -2.2 | 2.2 | 5.7 | -2.9 | 1.1 | 0.9 | -6.9 | -3.3 |
| Elko..... | 8.1 | -1.8 | 3.0 | 5.0 | 0.9 | -0.7 | 2.6 | 4.0 | 4.6 | 2.8 | 1.3 | -13.6 | 16.2 |

N. B.—All quantities are plus unless otherwise designated.

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 5
Coast Division—Hydrographic Data

CHAPTER V.

COAST DIVISION—HYDROGRAPHIC DATA.

REGULAR METERING STATION.

BELKNAP CREEK AT BELKNAP LAKE (1000).

Location.—Just at lower end of Belknap lake in section 36, township 6, range 7, west of 7th meridian.

Records Available.—Measurements were started in October, 1912, and have been more or less continuous ever since.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge.

Channel.—Bed of stream strewn with rocks and boulders, giving uneven bottom, but permanent control.

Discharge Measurements.—Nine meter measurements made during 1912, 1913, and 1914 define the rating curve very well except for extreme low and extreme high water.

Winter Flow.—Very heavy snowfall but very little ice, so that open-water conditions obtain practically all winter.

Accuracy.—D. Poor because the gauge readings were not taken very frequently.

Co-operation.—Gauge readings are made by employees of the Westminster Power Company.

DISCHARGE MEASUREMENTS of Belknap Creek, Belknap Lake, 1912-1913-1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft | Ft. persec. | Feet. | Sec.-ft |
| 1912. | | | | | | | |
| Oct. 21..... | C. G. Cline..... | 1,046 | 33 | 51 | 0.7 | 1.60 | 34 |
| 1913. | | | | | | | |
| June 4..... | H. C. Hughes..... | 1,673 | 35 | 101 | 2.7 | 3.20 | 257 |
| " 11..... | do..... | 1,673 | 34 | 85 | 1.8 | 2.70 | 148 |
| " 25..... | do..... | 1,673 | 34 | 88 | 1.8 | 2.65 | 147 |
| July 22..... | do..... | 1,673 | 36 | 106 | 2.0 | 2.92 | 202 |
| " 31..... | do..... | 1,673 | 35 | 74 | 1.0 | 2.02 | 75 |
| Sept. 22..... | F. MacLachlan..... | 1,673 | 35 | 50 | 0.8 | 1.55 | 41 |
| 1914. | | | | | | | |
| Aug. 1..... | C. G. Cline..... | 1,933 | 33 | 66 | 0.8 | 1.72 | 50 |
| Nov. 15..... | H. C. Hughes..... | 1,933 | 35 | 71 | 0.5 | 1.50 | 34 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek at Belknap Lake for 1914.

| DAY. | February. | | March. | | April. | | May. | | June. | | July. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 9 | | 23 | | 20 | | 81 | | 109 | | 170 |
| 2 | 0.8 | 9 | | 26 | | 27 | | 84 | | 112 | 2.85 | 183 |
| 3 | | 9 | | 28 | | 33 | | 86 | | 116 | | 165 |
| 4 | | 9 | 1.45 | 30 | | 42 | | 89 | | 120 | | 147 |
| 5 | | 9 | | 33 | | 49 | | 91 | | 100 | | 129 |
| 6 | | 9 | | 36 | 1.8 | 57 | 2.2 | 93 | 2.1 | 83 | | 111 |
| 7 | | 10 | | 39 | | 58 | | 101 | | 83 | 2.2 | 93 |
| 8 | | 10 | | 40 | | 59 | | 109 | | 83 | | 93 |
| 9 | | 10 | | 42 | | 60 | | 117 | | 83 | 2.2 | 93 |
| 10 | | 10 | | 44 | | 61 | | 125 | | 83 | | 102 |
| 11 | | 10 | | 45 | | 62 | | 133 | 2.1 | 83 | | 111 |
| 12 | | 10 | | 47 | | 63 | | 141 | | 93 | | 119 |
| 13 | | 11 | | 49 | | 64 | | 149 | | 105 | | 127 |
| 14 | | 11 | | 51 | | 65 | | 157 | | 117 | | 116 |
| 15 | | 11 | | 53 | | 66 | | 165 | | 129 | | 105 |
| 16 | | 11 | | 55 | | 67 | | 173 | 2.6 | 141 | 2.2 | 93 |
| 17 | | 11 | | 57 | | 68 | | 181 | | 134 | | 99 |
| 18 | 1.0 | 11 | | 59 | | 69 | | 189 | 2.5 | 127 | 2.32 | 105 |
| 19 | | 11 | 1.85 | 61 | | 70 | | 197 | | 126 | | 97 |
| 20 | | 12 | | 56 | | 71 | | 205 | | 125 | | 89 |
| 21 | | 13 | | 51 | | 73 | | 213 | | 124 | | 81 |
| 22 | | 14 | | 46 | 2.0 | 74 | 3.05 | 222 | | 123 | | 73 |
| 23 | | 15 | | 41 | | 74 | | 207 | | 122 | | 65 |
| 24 | | 15 | | 40 | | 75 | | 192 | | 121 | 2.8 | 57 |
| 25 | | 16 | | 37 | | 75 | | 177 | | 120 | 1.83 | 60 |
| 26 | | 17 | | 33 | | 76 | | 162 | | 119 | | 60 |
| 27 | | 19 | | 29 | | 77 | | 147 | | 117 | 1.86 | 61 |
| 28 | | 20 | | 22 | | 77 | | 132 | | 115 | | 55 |
| 29 | | | | 18 | | 78 | | 117 | 2.4 | 114 | | 52 |
| 30 | | | | 15 | 2.05 | 79 | 2.3 | 103 | 2.7 | 156 | 1.7 | 49 |
| 31 | | | 1.05 | 12 | | | | 106 | | | 1.7 | 49 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek at Belknap Lake
for 1914.

| DAY. | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-72 | 50 | 1-26 | 20 | | 70 | | 300 | | 50 |
| 2..... | | 50 | | 22 | | 60 | 3-90 | 410 | 1-65 | 45 |
| 3..... | | 50 | | 25 | 1-75 | 53 | | 400 | | 40 |
| 4..... | | 50 | | 27 | | 50 | | 300 | 1-45 | 30 |
| 5..... | | 50 | | 30 | | 45 | | 200 | | 30 |
| 6..... | | 50 | | 32 | | 40 | | 150 | | 25 |
| 7..... | 1-75 | 53 | | 35 | | 35 | | 150 | | 20 |
| 8..... | | 50 | 1-55 | 37 | | 30 | 2-65 | 150 | | 15 |
| 9..... | | 45 | 1-65 | 45 | | 25 | | 100 | 1-0 | 11 |
| 10..... | 1-60 | 41 | | 50 | 1-30 | 22 | | 90 | | 11 |
| 11..... | | 45 | | 50 | | 30 | | 80 | | 11 |
| 12..... | 1-70 | 49 | | 50 | | 40 | 1-85 | 60 | | 11 |
| 13..... | 1-70 | 49 | | 50 | | 50 | | 50 | | 10 |
| 14..... | | 49 | | 100 | | 100 | | 40 | | 10 |
| 15..... | 1-70 | 49 | | 300 | | 200 | 1-50 | 33 | | 10 |
| 16..... | | 45 | | 500 | | 400 | | 35 | | 10 |
| 17..... | | 40 | | 600 | | 500 | | 40 | | 10 |
| 18..... | 1-46 | 30 | 5-00 | 630 | 4-80 | 590 | | 40 | | 10 |
| 19..... | | 30 | | 500 | | 500 | | 45 | | 10 |
| 20..... | 1-44 | 29 | 3-40 | 300 | | 400 | | 45 | | 10 |
| 21..... | | 29 | | 250 | | 200 | 1-70 | 49 | | 10 |
| 22..... | 1-44 | 29 | | 200 | | 100 | | 80 | | 10 |
| 23..... | | 29 | | 150 | | 70 | 2-40 | 115 | | 10 |
| 24..... | | 25 | | 120 | 1-80 | 57 | | 120 | | 10 |
| 25..... | 1-35 | 25 | | 120 | | 55 | | 140 | | 10 |
| 26..... | | 25 | | 120 | | 50 | | 150 | | 9 |
| 27..... | | 24 | | 115 | | 50 | 2-70 | 155 | | 9 |
| 28..... | | 23 | 2-40 | 115 | 1-70 | 49 | | 150 | | 9 |
| 29..... | 1-31 | 22 | | 100 | | 50 | | 120 | 0-8 | 9 |
| 30..... | | 21 | | 90 | | 100 | | 100 | | 10 |
| 31..... | | 21 | | | | 200 | | | 1-1 | 13 |

MONTHLY DISCHARGE of Belknap Creek at Belknap Lake for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | Accuracy. |
|----------------|---------------------------|----------|-------|-----------|
| | Maximum. | Minimum. | Mean. | |
| February..... | | | 12 | D |
| March..... | | | 39 | D |
| April..... | 79 | 20 | 63 | D |
| May..... | 222 | 81 | 143 | D |
| June..... | 156 | 83 | 113 | C |
| July..... | 183 | 49 | 97 | C |
| August..... | 53 | 21 | 38 | C |
| September..... | 630 | 20 | 159 | D |
| October..... | 590 | 22 | 136 | D |
| November..... | 410 | 33 | 130 | D |
| December..... | 50 | 9 | 16 | D |

BELKNAP CREEK BELOW ANN LAKE (1063).

Location.—About half way between Ann lake and Belknap lake, near the proposed site for the diversion dam, and in section 36, township 6, range 7, west of 7th meridian.

Records Available.—June to December, 1914.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge.

Channel.—Boulders and gravel.

Discharge Measurements.—Five meter measurements made during 1913 and 1914 define the rating curve accurately except for very high stages.

Winter Flow.—Stream freezes at gauging section for a week or two in very cold weather.

Accuracy.—D. Poor on account of the infrequency of the gauge readings.

Co-operation.—Gauge readings are made by employees of the Westminster Power Company.

DISCHARGE MEASUREMENTS OF Belknap Creek below Ann Lake, 1913-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1913. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 24..... | H. C. Hughes..... | 1,673 | 27 | 76 | 1.8 | 2.52 | 135 |
| Aug. 1..... | do..... | 1,673 | 32 | 91 | 0.9 | 2.08 | 82 |
| Sept. 19..... | F. MacLachlan..... | 1,673 | 30 | 60 | 0.5 | 1.20 | 30 |
| 1914. | | | | | | | |
| Aug. 1..... | C. G. Cline..... | 1,933 | 31 | 83 | 0.6 | 1.55 | 50 |
| Nov. 10..... | H. C. Hughes..... | 1,933 | 31 | 59 | 0.5 | 1.12 | 28 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek below Ann Lake,
1914.

| DAY. | June. | | July. | | August. | | September. | | October. | | November. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | | 1-55 | 48 | 1-05 | 24 | | 60 | | 200 |
| 2 | | | 2-75 | 170 | | 48 | | 26 | | 50 | 3-20 | 250 |
| 3 | | | | 150 | | 48 | | 28 | 1-45 | 43 | | 200 |
| 4 | | | | 130 | | 50 | | 30 | | 40 | | 150 |
| 5 | | | | 120 | | 50 | | 32 | | 40 | | 140 |
| 6 | | | | 100 | | 50 | | 34 | | 35 | | 130 |
| 7 | | | 2-15 | 90 | | 50 | | 36 | | 30 | | 120 |
| 8 | | | | 95 | 1-58 | 50 | 1-35 | 38 | | 25 | 2-40 | 117 |
| 9 | | | | 100 | 1-45 | 43 | | 40 | 1-05 | 24 | | 100 |
| 10 | | | | 110 | 1-42 | 42 | | 50 | | 30 | | 80 |
| 11 | 1-9 | 70 | | 115 | | 44 | | 60 | | 50 | | 70 |
| 12 | | | | 120 | 1-50 | 46 | | 70 | | 60 | | 50 |
| 13 | | | 2-45 | 125 | 1-55 | 48 | | 80 | | 70 | 1-50 | 46 |
| 14 | | | | 110 | 1-50 | 46 | | 100 | | 80 | | 40 |
| 15 | | | | 100 | 1-50 | 46 | | 200 | | 100 | | 30 |
| 16 | 2-5 | 130 | 2-15 | 90 | | 40 | | 400 | | 200 | 1-10 | 26 |
| 17 | | | | 100 | | 35 | | 500 | | 400 | | 30 |
| 18 | 2-4 | 117 | 2-25 | 160 | 1-23 | 32 | 5-10 | 600 | 4-55 | 500 | | 35 |
| 19 | | | 2-28 | 100 | 1-23 | 32 | | 400 | | 300 | | 40 |
| 20 | | | | 90 | 1-23 | 32 | 3-05 | 220 | | 200 | | 45 |
| 21 | | | | 80 | 1-23 | 32 | | 200 | | 100 | 1-55 | 48 |
| 22 | | | | 70 | 1-23 | 32 | | 150 | | 80 | | 70 |
| 23 | | | | 60 | | 30 | | 100 | | 50 | 2-15 | 90 |
| 24 | | | 1-76 | 60 | | 30 | | 100 | 1-55 | 48 | | 100 |
| 25 | | | | 60 | 1-13 | 27 | | 90 | | 45 | | 110 |
| 26 | | | | 60 | | 27 | | 90 | | 45 | | 120 |
| 27 | | | 1-76 | 60 | | 26 | | 90 | | 45 | 2-45 | 125 |
| 28 | | | | 55 | | 26 | 2-10 | 85 | 1-45 | 48 | | 100 |
| 29 | 2-3 | 105 | | 50 | 1-10 | 26 | | 80 | | 50 | | 80 |
| 30 | 2-6 | 145 | 1-55 | 48 | | 25 | | 70 | | 100 | | 60 |
| 31 | | | | 48 | | 25 | | | | 200 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Belknap Creek below Ann Lake,
for 1914.—*Concluded.*

| DAY. | December. | |
|---------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1..... | | 50 |
| 2..... | 1-55 | 48 |
| 3..... | | 45 |
| 4..... | 1-40 | 40 |
| 5..... | | 35 |
| 6..... | | 30 |
| 7..... | | 30 |
| 8..... | | 25 |
| 9..... | 1-05 | 24 |
| 10..... | | 23 |
| 11..... | 1-00 | 22 |
| 12..... | | 22 |
| 13..... | | 22 |
| 14..... | | 20 |
| 15..... | | 20 |
| 16..... | | 20 |
| 17..... | | 20 |
| 18..... | | 20 |
| 19..... | | 20 |
| 20..... | | 20 |
| 21..... | | 18 |
| 22..... | | 18 |
| 23..... | | 18 |
| 24..... | | 18 |
| 25..... | | 18 |
| 26..... | | 18 |
| 27..... | | 18 |
| 28..... | | 18 |
| 29..... | | 18 |
| 30..... | | 18 |
| 31..... | 0-85 | 18 |

MONTHLY DISCHARGE of Belknap Creek below Ann Lake, for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | Accuracy. |
|----------------|---------------------------|----------|-------|-----------|
| | Maximum. | Minimum. | Mean. | |
| July..... | 170 | 48 | 89 | C |
| August..... | 50 | 25 | 38 | C |
| September..... | 600 | 24 | 134 | D |
| October..... | 500 | 24 | 101 | D |
| November..... | 250 | 26 | 93 | D |
| December..... | 50 | 18 | 24 | D |

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BOULDER CREEK (1001).

Location.—Near mouth of creek and near Jones lake in section 28, township 3, range 27, west of 6th meridian.

Records available.—Daily discharges from January, 1913, to December, 1914.

Drainage Area.—Not known.

Gauge.—A fine wire is stretched tightly across the stream, and the distance to the water surface is measured with a graduated rod. These figures are subtracted from 15.00 to give the direct readings.

Channel.—Bed of stream covered with large rocks, giving an uneven bottom but good control.

Winter Flow.—The stream freezes over for a month or two each winter.

Accuracy.—Below 100 cubic feet per second, "B". Above 100 cubic feet per second, "C".

Co-operation.—The records on this stream are kept by Messrs. Anderson and Warden, Civil Engineers, Vancouver, for the Vancouver Power Company.

DISCHARGE MEASUREMENTS of Boulder Creek near mouth, 1911-12-13-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1911. | | | | | | | |
| Nov. 3..... | K. N. Smith..... | 1,057 | 28 | 24 | 0.5 | 4.20 | 12.6 |
| 1912. | | | | | | | |
| Sept. 8..... | C. G. Cline..... | 1,046 | 30 | 24 | 0.5 | 4.25 | 13.4 |
| 1913. | | | | | | | |
| July 24..... | K. G. Chisholm..... | 1,055 | 27 | 52 | 1.6 | 4.90 | 84.6 |
| Sept. 11..... | K. G. Chisholm and F. Mac- Lachlan..... | 1,055 | 32 | 34 | 1.0 | 4.60 | 34.6 |
| 1914. | | | | | | | |
| July 24..... | C. G. Cline..... | 1,933 | 30 | 34 | 0.7 | 4.40 | 22.7 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Boulder Creek near mouth, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 4-25 | 15 | 4-3 | 16 | 4-8 | 65 | 4-45 | 25 | 5-1 | 120 | 5-25 | 150 |
| 2 | 4-25 | 15 | 4-3 | 16 | 4-65 | 44 | 4-45 | 25 | 5-4 | 180 | 5-25 | 150 |
| 3 | 4-25 | 15 | 4-4 | 22 | 4-55 | 33 | 4-8 | 65 | 5-45 | 190 | 5-15 | 130 |
| 4 | 5-3 | 160 | 4-4 | 22 | 4-5 | 28 | 5-0 | 105 | 5-15 | 130 | 4-9 | 85 |
| 5 | 5-6 | 220 | 4-4 | 22 | 4-45 | 25 | 5-25 | 150 | 5-05 | 115 | 4-8 | 75 |
| 6 | 6-0 | 300 | 4-95 | 95 | 4-4 | 22 | 5-05 | 110 | 5-0 | 105 | 4-75 | 58 |
| 7 | 5-35 | 170 | 4-7 | 50 | 4-4 | 22 | 5-05 | 110 | 5-05 | 115 | 4-7 | 50 |
| 8 | 4-95 | 95 | 4-55 | 33 | 4-6 | 37 | 5-1 | 120 | 5-1 | 120 | 4-7 | 50 |
| 9 | 4-75 | 57 | 4-5 | 28 | 4-6 | 37 | 5-1 | 120 | 5-2 | 140 | 4-8 | 65 |
| 10 | 4-7 | 50 | 4-4 | 22 | 4-5 | 28 | 5-1 | 120 | 5-3 | 160 | 4-75 | 58 |
| 11 | 4-65 | 43 | 4-25 | 15 | 4-5 | 28 | 5-05 | 110 | 5-25 | 150 | 4-9 | 85 |
| 12 | 4-6 | 37 | 4-25 | 15 | 4-5 | 28 | 5-0 | 105 | 5-25 | 150 | 5-05 | 115 |
| 13 | 4-55 | 33 | 4-2 | 13 | 4-8 | 65 | 5-05 | 110 | 5-3 | 160 | 5-05 | 115 |
| 14 | 4-55 | 33 | 4-2 | 13 | 5-3 | 160 | 5-1 | 120 | 5-5 | 200 | 5-05 | 115 |
| 15 | 4-5 | 28 | 4-25 | 15 | 4-8 | 65 | 5-3 | 160 | 5-3 | 160 | 5-1 | 120 |
| 16 | 4-5 | 28 | 4-3 | 16 | 5-0 | 105 | 5-0 | 105 | 5-2 | 140 | 5-15 | 130 |
| 17 | 4-4 | 22 | 4-3 | 16 | 5-1 | 120 | 4-85 | 75 | 5-2 | 140 | 5-05 | 115 |
| 18 | 4-4 | 22 | 4-3 | 16 | 5-0 | 105 | 4-85 | 75 | 5-2 | 140 | 5-0 | 105 |
| 19 | 4-4 | 22 | 4-3 | 16 | 4-95 | 95 | 5-4 | 180 | 5-15 | 130 | 4-9 | 85 |
| 20 | 4-35 | 19 | 4-35 | 19 | 5-1 | 120 | 5-1 | 120 | 5-2 | 140 | 4-9 | 85 |
| 21 | 4-35 | 19 | 4-4 | 22 | 5-1 | 120 | 4-9 | 85 | 5-2 | 140 | 4-8 | 65 |
| 22 | 4-35 | 19 | 4-5 | 28 | 5-0 | 105 | 4-85 | 75 | 5-25 | 150 | 4-8 | 65 |
| 23 | 4-35 | 19 | 4-45 | 25 | 4-9 | 85 | 4-85 | 75 | 5-3 | 160 | 4-75 | 58 |
| 24 | 4-35 | 19 | 4-45 | 25 | 4-85 | 75 | 4-8 | 65 | 5-25 | 150 | 4-8 | 65 |
| 25 | 4-40 | 22 | 4-45 | 25 | 4-7 | 50 | 4-75 | 58 | 5-15 | 130 | 4-85 | 75 |
| 26 | 4-4 | 22 | 4-4 | 22 | 4-8 | 65 | 4-75 | 58 | 5-0 | 105 | 4-85 | 75 |
| 27 | 4-4 | 22 | 4-6 | 37 | 4-6 | 37 | 4-75 | 58 | 5-0 | 105 | 5-1 | 120 |
| 28 | 4-4 | 22 | 4-5 | 28 | 4-55 | 33 | 4-75 | 58 | 4-9 | 85 | 4-9 | 85 |
| 29 | 4-4 | 22 | ..... | ..... | 4-55 | 33 | 4-7 | 50 | 4-8 | 65 | 4-95 | 95 |
| 30 | 4-4 | 22 | ..... | ..... | 4-5 | 28 | 4-85 | 75 | 4-9 | 85 | 4-95 | 95 |
| 31 | 4-35 | 19 | ..... | ..... | 4-5 | 28 | ..... | ..... | 5-1 | 120 | ..... | ..... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Boulder Creek near mouth for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 4.95 | 95 | 4.3 | 16 | 4.05 | 9 | 4.35 | 19 | 5.3 | 160 | 4.6 | 37 |
| 2 | 4.95 | 95 | 4.25 | 15 | 4.05 | 9 | 4.35 | 19 | 5.1 | 120 | 4.5 | 23 |
| 3 | 4.95 | 95 | 4.25 | 15 | 4.05 | 9 | 4.3 | 16 | 5.1 | 120 | 4.5 | 28 |
| 4 | 4.9 | 85 | 4.25 | 15 | 4.05 | 9 | 4.3 | 16 | 5.25 | 150 | 4.4 | 22 |
| 5 | 4.8 | 65 | 4.25 | 15 | 4.05 | 9 | 4.25 | 15 | 5.0 | 105 | 4.4 | 22 |
| 6 | 4.7 | 50 | 4.25 | 15 | 4.05 | 9 | 4.25 | 15 | 4.8 | 65 | 4.4 | 22 |
| 7 | 4.7 | 50 | 4.3 | 16 | 4.05 | 9 | 4.2 | 13 | 4.7 | 50 | 4.35 | 19 |
| 8 | 4.7 | 50 | 4.45 | 25 | 4.4 | 22 | 4.2 | 13 | 4.8 | 65 | 4.35 | 19 |
| 9 | 4.7 | 50 | 4.3 | 16 | 4.45 | 25 | 4.2 | 13 | 4.9 | 85 | 4.3 | 16 |
| 10 | 4.7 | 50 | 4.25 | 15 | 4.35 | 19 | 4.2 | 13 | 4.8 | 65 | 4.3 | 16 |
| 11 | 4.7 | 50 | 4.25 | 15 | 4.5 | 28 | 4.4 | 22 | 5.15 | 130 | Frozen | 15 |
| 12 | 4.7 | 50 | 4.2 | 13 | 4.35 | 19 | 4.35 | 19 | 4.9 | 85 | ..... | 15 |
| 13 | 4.7 | 50 | 4.2 | 13 | 4.3 | 16 | 4.4 | 22 | 4.6 | 37 | ..... | 15 |
| 14 | 4.7 | 50 | 4.2 | 13 | 4.35 | 19 | 4.3 | 16 | 4.6 | 37 | ..... | 15 |
| 15 | 4.7 | 50 | 4.15 | 12 | 4.6 | 37 | 4.25 | 15 | 4.6 | 37 | ..... | 15 |
| 16 | 4.6 | 37 | 4.15 | 12 | 4.5 | 28 | 4.2 | 13 | 4.5 | 28 | ..... | 15 |
| 17 | 4.6 | 37 | 4.15 | 12 | 4.5 | 28 | 4.8 | 65 | 4.5 | 28 | ..... | 15 |
| 18 | 4.6 | 37 | 4.15 | 12 | 5.0 | 105 | 4.7 | 50 | 4.45 | 25 | ..... | 15 |
| 19 | 4.6 | 37 | 4.15 | 12 | 4.85 | 75 | 4.85 | 75 | 4.6 | 37 | ..... | 15 |
| 20 | 4.6 | 37 | 4.15 | 12 | 4.7 | 50 | 4.65 | 44 | 4.7 | 50 | ..... | 15 |
| 21 | 4.55 | 33 | 4.15 | 12 | 4.65 | 44 | 4.5 | 28 | 4.8 | 65 | ..... | 10 |
| 22 | 4.5 | 28 | 4.15 | 12 | 4.5 | 28 | 4.45 | 25 | 4.8 | 65 | ..... | 10 |
| 23 | 4.45 | 25 | 4.1 | 10 | 4.45 | 25 | 4.4 | 22 | 4.8 | 65 | ..... | 10 |
| 24 | 4.4 | 22 | 4.1 | 10 | 4.35 | 19 | 4.4 | 22 | 4.85 | 75 | ..... | 10 |
| 25 | 4.4 | 22 | 4.1 | 10 | 4.3 | 16 | 4.4 | 22 | 4.95 | 95 | ..... | 10 |
| 26 | 4.4 | 22 | 4.1 | 10 | 4.25 | 15 | 4.35 | 19 | 5.10 | 120 | ..... | 10 |
| 27 | 4.4 | 22 | 4.1 | 10 | 4.6 | 37 | 4.3 | 16 | 5.05 | 115 | ..... | 15 |
| 28 | 4.35 | 19 | 4.05 | 9 | 4.45 | 25 | 4.25 | 15 | 4.90 | 85 | ..... | 15 |
| 29 | 4.3 | 16 | 4.05 | 9 | 4.4 | 22 | 4.25 | 15 | 4.75 | 60 | ..... | 15 |
| 30 | 4.3 | 16 | 4.05 | 9 | 4.35 | 19 | 4.5 | 28 | 4.65 | 44 | ..... | 15 |
| 31 | 4.3 | 16 | 4.05 | 9 | ..... | ..... | 4.9 | 85 | ..... | ..... | Frozen | 15 |

MONTHLY DISCHARGE of Boulder Creek near mouth for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|---------------------|----------|
| | CFS. | | | Total in acre-feet. | Accuracy |
| | Maximum. | Minimum. | Mean. | | |
| January | 300 | 15 | 52 | 3,200 | C |
| February | 95 | 13 | 25 | 1,390 | B |
| March | 160 | 22 | 61 | 3,750 | B |
| April | 180 | 25 | 92 | 5,470 | C |
| May | 200 | 65 | 135 | 8,300 | C |
| June | 150 | 50 | 91 | 5,410 | C |
| July | 95 | 15 | 44 | 2,700 | B |
| August | 25 | 9 | 13 | 800 | B |
| September | 105 | 9 | 26 | 1,550 | B |
| October | 85 | 13 | 25 | 1,540 | B |
| November | 160 | 25 | 75 | 4,520 | C |
| December | 37 | 10 | 17 | 1,050 | C |
| The year | 300 | 9 | 55 | 39,680 | C |

BRANDT CREEK AT MOUTH (1002)

Location.—Section 4, township 7, range 7, west of the 7th meridian.

Records Available.—October 19 to December 31, 1912; January 1 to December 31, 1913; January 1, to September 11, 1914, station abandoned, and new station above Young creek used.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge, nailed to tree. Generally five or six readings a week.

Channel.—Rocky bed, giving a rough bottom but permanent control.

Discharge measurements.—Rating curve well defined by nine meter measurements made during 1912 and 1913.

Winter Flow.—Open all year.

Accuracy.—B, when gauge readings were taken frequently enough.

Co-operation.—Gauge readers maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS of Brandt Creek at mouth, 1912-13-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|--------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1912. | | | | | | | |
| Oct. 19..... | C. G. Cline..... | 1046 | 30 | 25 | 1.5 | 2.02 | 37 |
| 1913. | | | | | | | |
| May 29..... | H. C. Hughes..... | 1673 | 40 | 53 | 2.3 | 2.63 | 122 |
| June 9..... | do..... | 1673 | 36 | 49 | 1.9 | 2.45 | 94 |
| June 18..... | do..... | 1673 | 36 | 45 | 1.7 | 2.35 | 75 |
| June 27..... | do..... | 1673 | 36 | 53 | 2.2 | 2.57 | 115 |
| July 3..... | do..... | 1673 | 36 | 42 | 1.4 | 2.26 | 59 |
| July 29..... | do..... | 1673 | 19 | 20 | 0.6 | 1.62 | 13 |
| Sept 24..... | F. MacLachlan..... | 1673 | 21 | 19 | 0.5 | 1.48 | 9 |
| *Nov. 7..... | do..... | 1521 | 41 | 27 | 1.3 | 2.08 | 36 |
| Nov. 12..... | do..... | 1521 | 40 | 23 | 1.1 | 1.91 | 25 |
| Nov. 13..... | do..... | 1521 | 40 | 21 | 1.1 | 1.84 | 24 |
| 1914. | | | | | | | |
| May 15..... | do..... | 1521 | 41 | 46 | 2.3 | 2.56 | 102 |

* Different section.

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DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek at mouth for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-00 | 33 | 1-8 | 21 | 3-0 | 190 | 1-9 | 26 | 2-5 | 100 | 2-5 | 100 |
| 2 | 2-55 | 110 | 1-7 | 16 | 2-5 | 100 | 1-92 | 28 | 2-65 | 130 | 2-4 | 83 |
| 3 | 2-45 | 90 | 1-7 | 16 | 2-5 | 100 | 2-6 | 120 | 2-6 | 120 | 2-2 | 53 |
| 4 | 5-20 | 610 | 1-7 | 16 | 2-25 | 60 | 2-7 | 140 | 2-3 | 67 | 2-08 | 40 |
| 5 | 3-20 | 230 | 1-65 | 14 | 2-05 | 37 | 2-8 | 155 | 2-25 | 60 | 1-95 | 30 |
| 6 | 3-30 | 245 | | 15 | 2-0 | 33 | 2-55 | 110 | 2-3 | 67 | 1-9 | 26 |
| 7 | 2-90 | 175 | | 15 | | 40 | 2-5 | 100 | 2-3 | 67 | | 30 |
| 8 | | 150 | 1-7 | 16 | | 50 | 2-45 | 90 | 2-5 | 100 | | 35 |
| 9 | | 100 | | 16 | | 60 | 2-50 | 100 | 2-45 | 90 | | 40 |
| 10 | | 80 | 1-7 | 16 | | 70 | 2-5 | 100 | 2-35 | 75 | 2-1 | 42 |
| 11 | | 60 | 1-7 | 16 | | 80 | 2-5 | 100 | | 100 | 2-2 | 53 |
| 12 | | 50 | 1-75 | 18 | | 90 | 2-3 | 67 | | 120 | 2-2 | 53 |
| 13 | | 40 | 2-05 | 37 | | 100 | 3-5 | 280 | 2-7 | 140 | 2-3 | 67 |
| 14 | 2-0 | 33 | 1-9 | 26 | | 110 | 3-0 | 190 | 2-6 | 120 | 2-5 | 100 |
| 15 | | 35 | 1-9 | 26 | | 120 | 3-4 | 265 | 2-4 | 83 | 2-6 | 120 |
| 16 | | 40 | 1-92 | 27 | 2-65 | 130 | 2-9 | 175 | 2-5 | 100 | 2-2 | 53 |
| 17 | 2-1 | 42 | 1-97 | 31 | 2-60 | 120 | | 160 | 2-25 | 60 | 2-1 | 42 |
| 18 | 2-1 | 42 | 1-95 | 30 | 2-50 | 100 | 2-7 | 140 | 2-25 | 60 | | 40 |
| 19 | 2-1 | 42 | 2-0 | 33 | 2-65 | 130 | 3-4 | 265 | 2-25 | 60 | 2-05 | 38 |
| 20 | 1-95 | 30 | 2-0 | 33 | 2-70 | 140 | 2-5 | 100 | 2-4 | 83 | 2-05 | 38 |
| 21 | 1-9 | 26 | 2-3 | 67 | 2-65 | 130 | 2-3 | 67 | 2-45 | 90 | 2-00 | 33 |
| 22 | | 20 | 2-4 | 83 | 2-50 | 100 | 2-25 | 60 | 2-7 | 140 | 2-00 | 33 |
| 23 | 1-75 | 18 | 2-7 | 140 | 2-30 | 67 | 2-3 | 67 | 2-5 | 100 | 2-00 | 33 |
| 24 | 1-7 | 16 | 2-5 | 100 | 2-20 | 53 | 2-25 | 60 | 2-3 | 67 | 2-10 | 42 |
| 25 | 1-7 | 16 | 2-2 | 53 | 2-10 | 42 | 2-1 | 42 | 2-7 | 140 | 2-68 | 135 |
| 26 | 2-15 | 48 | 2-1 | 42 | 2-0 | 33 | | 45 | 3-3 | 245 | 2-40 | 83 |
| 27 | 1-9 | 26 | 2-3 | 67 | 1-9 | 26 | | 45 | 2-7 | 140 | 2-70 | 140 |
| 28 | 1-8 | 21 | 2-2 | 53 | 1-9 | 26 | 2-15 | 48 | 2-3 | 67 | | 130 |
| 29 | 1-8 | 21 | | | 2-3 | 67 | 2-15 | 48 | 2-1 | 42 | | 120 |
| 30 | 1-95 | 30 | | | 2-1 | 42 | 2-3 | 67 | 2-3 | 67 | | 110 |
| 31 | 1-9 | 26 | | | 2-0 | 33 | | | 2-6 | 120 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek at mouth for 1914.

| Day. | July. | | August. | | September. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-1 | 42 | | 7 | | |
| 2 | | 40 | | 6 | 1-10 | 5 |
| 3 | | 40 | 1-3 | 6 | | |
| 4 | | 30 | | 6 | | |
| 5 | | 30 | | 7 | | |
| 6 | 1-9 | 26 | | 7 | | |
| 7 | | 26 | | 7 | 1-10 | 5 |
| 8 | | 24 | | 7 | | |
| 9 | | 22 | | 8 | | |
| 10 | | 20 | 1-44 | 8 | 1-80 | 21 |
| 11 | | 18 | | 8 | 1-60 | 12 |
| 12 | | 16 | | 8 | | |
| 13 | 1-7 | 16 | | 7 | | |
| 14 | 1-9 | 26 | | 7 | | |
| 15 | 1-8 | 21 | 1-40 | 7 | | |
| 16 | | 20 | | 6 | | |
| 17 | | 18 | 1-24 | 6 | | |
| 18 | | 15 | | 6 | | |
| 19 | | 12 | | 6 | | |
| 20 | | 10 | | 6 | | |
| 21 | 1-45 | 8 | | 6 | | |
| 22 | 1-42 | 7 | | 6 | | |
| 23 | 1-45 | 8 | | 6 | | |
| 24 | | 8 | 1-25 | 6 | | |
| 25 | | 8 | | 6 | | |
| 26 | | 8 | | 6 | | |
| 27 | | 8 | | 5 | | |
| 28 | 1-45 | 8 | | 5 | | |
| 29 | | 8 | | 5 | | |
| 30 | | 8 | 1-10 | 5 | | |
| 31 | | 7 | | 5 | | |

MONTHLY DISCHARGE of Brandt Creek at mouth for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | Accuracy |
|----------|---------------------------|----------|-------|----------|
| | Maximum. | Minimum. | Mean. | |
| | January | 610 | 16 |  | 81 | D |
| February | 140 | 14 | 37 | B |
| March | 190 | 26 | 80 | C |
| April | 280 | 26 | 109 | B |
| May | 245 | 42 | 97 | B |
| June | 140 | 26 | 65 | C |
| July | 42 | 7 | 18 | D |
| August | 8 | 5 | 6 | D |

BRANDT CREEK ABOVE YOUNG CREEK (1021).

Location.—A few hundred feet above the mouth of Young creek, in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Part of 1914, with interruptions.

Drainage Area.—Not known.

Gauge.—The original staff gauge has been replaced by a chain gauge mounted on a pole which is fastened to trees and projects over the stream.

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Channel.—Solid rock at control.

Discharge measurements.—Nine meter measurements were made during 1913 and 1914, but most of them were referred to the old gauge which was washed out.

Winter Flow.—Very heavy snowfall but practically no ice, so that open water conditions obtain all winter.

Accuracy.—D.

Co-operation.—Gauge readers are maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS of Brandt Creek above Young Creek, 1913-1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------|---------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| June 3 | H. C. Hughes | 1673 | 11 | 21.5 | 3.3 | 1.70 | 73.5 |
| " 10 | do | 1673 | 11 | 16.5 | 2.2 | 1.50 | 37.0 |
| " 18 | do | 1673 | 11 | 18.0 | 3.1 | 1.60 | 54.2 |
| July 7 | do | 1673 | 10 | 12.9 | 1.6 | 1.30 | 21.0 |
| " 30 | do | 1673 | 10 | 8.4 | 0.6 | 0.70 | 4.7 |
| Sept. 30 | F. MacLachlan | 1673 | 9 | 8.4 | 0.3 | 0.51 | 2.4 ¹ |
| | | | | | | | |
| 1914. | | | | | | | |
| May 18 | F. MacLachlan | 1521 | 12 | 15.7 | 1.5 | 1.88 | 23.1 |
| July 31 | C. G. Cline | 1933 | 8 | 1.1 | 0.7 | 0.70 | 0.8 |
| Nov. 14 | H. C. Hughes | 1933 | 10 | 10.4 | 0.6 | 1.64 | 6.0 ² |

¹ First staff gauge washed out January 6, 1914. Replaced the same month.

² Second gauge washed out October 19, 1914. Replaced November 14, 1914, by chain gauge.

DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek above Young for 1914.

| DAY. | February. | | March. | | April. | | May. | | June. | | July. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 0.8 | 1.5 | | | | | | | 15 | | 14 | 40 |
| 2..... | | | | | | | | | 16 | | 12 | 52 |
| 3..... | | | | | | | | | 17 | | 12 | 40 |
| 4..... | | | | | | | | | 18 | 1.6 | 12 | 30 |
| 5..... | | | 1.05 | 3.5 | | | | | 19 | | 10 | 20 |
| 6..... | | | | | 1.9 | 25.0 | 1.8 | | 20 | 1.35 | 6 | 15 |
| 7..... | | | | | | | | | 20 | | 6 | 10 |
| 8..... | | | | | | | | | 20 | | 8 | 1.40 |
| 9..... | | | | | | | | | 20 | | 10 | 7 |
| 10..... | | | | | | | | | 21 | | 10 | 1.40 |
| 11..... | | | | | | | | | 21 | 1.6 | 12 | 7 |
| 12..... | | | | | | | | | 21 | | 12 | 6 |
| 13..... | | | | | | | | | 21 | 1.6 | 12 | 1.3 |
| 14..... | | | | | | | | | 22 | | 14 | 5 |
| 15..... | | | | | | | | | 22 | | 16 | 4 |
| 16..... | | | | | | | | | 22 | | 18 | 1.0 |
| 17..... | | | | | | | | | 23 | 1.75 | 18 | 3 |
| 18..... | 1.1 | 4.0 | | | | | 1.85 | | 23 | | 16 | 0.94 |
| 19..... | | | 1.9 | 25.0 | | | | | 25 | 1.7 | 15 | 2 |
| 20..... | | | | | | | | | 30 | | 15 | 0.85 |
| 21..... | | | | | | | | | 40 | | 15 | 1.6 |
| 22..... | | | | | 1.6 | 12.0 | 2.1 | | 42 | | 14 | 1.4 |
| 23..... | | | | | | | | | 40 | | 13 | 1.2 |
| 24..... | | | | | | | | | 40 | | 12 | 0.78 |
| 25..... | | | | | | | | | 35 | | 11 | 1 |
| 26..... | | | | | | | | | 30 | | 10 | 2 |
| 27..... | | | | | | | | | 25 | | 10 | 0.9 |
| 28..... | | | | | | | | | 20 | | 9 | 2 |
| 29..... | | | | | | | | | 15 | 1.5 | 9 | 1 |
| 30..... | | | | | 1.65 | 14.0 | 1.7 | | 15 | | 20 | 0.71 |
| 31..... | | | 1.1 | 4.0 | | | | | 15 | | | 0.8 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Brandt Creek above Young Creek, 1914.

| DAY. | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 0.8 | 0.57 | 0.4 | | | | | 1.70 | |
| 2 | | 0.8 | | 0.6 | | | | | | |
| 3 | 0.7 | 0.8 | | 0.8 | 0.90 | 2.00 | | | | |
| 4 | | 0.8 | | 1.0 | | | | | | |
| 5 | | 0.7 | | 1.2 | | | | | 1.60 | 6 |
| 6 | | 0.7 | | 1.4 | | | | | | |
| 7 | | 0.6 | | 1.6 | | | | | | |
| 8 | | 0.6 | 0.85 | 1.8 | | | | | 1.50 | |
| 9 | | 0.5 | 0.98 | 2.8 | | | | | | |
| 10 | 0.6 | 0.5 | | 4 | 0.90 | 2.00 | | | 1.50 | |
| 11 | | 0.5 | | 6 | | | 2.40 | | | |
| 12 | | 0.5 | | 10 | | | | | | |
| 13 | | 0.5 | | 20 | | | | | | |
| 14 | 0.6 | 0.5 | | 50 | | | 1.60 | 6 | 1.55 | |
| 15 | 0.6 | 0.5 | | 100 | | | | | | |
| 16 | | 0.5 | | 150 | | | 1.50 | | | |
| 17 | | 0.5 | | 200 | | | | | | |
| 18 | 0.6 | 0.5 | 3.20 | 250 | 3.20 | 2.50 | | | 1.45 | |
| 19 | | 0.5 | | 100 | | | | | | |
| 20 | 0.6 | 0.5 | 1.80 | 20 | | | | | | |
| 21 | | 0.5 | | 15 | | | 2.50 | | 1.45 | |
| 22 | 0.6 | 0.5 | | 10 | | | | | | |
| 23 | | 0.5 | | 10 | | | 2.70 | | 1.35 | |
| 24 | | 0.5 | | 8 | | | | | | |
| 25 | 0.6 | 0.5 | | 8 | | | | | | |
| 26 | | 0.5 | | 6 | | | 2.00 | | | |
| 27 | 0.6 | 0.5 | | 4 | | | | | | |
| 28 | 0.5 | 0.5 | 1.05 | 3.5 | | | 2.15 | | 1.40 | |
| 29 | 0.6 | 0.5 | | 3 | | | | | | |
| 30 | | 0.5 | | 3 | | | | | 2.35 | |
| 31 | | 0.4 | | | | | | | | |

MONTHLY DISCHARGE of Brandt Creek above Young Creek, for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | Accuracy. |
|-----------|---------------------------|----------|-------|-----------|
| | Maximum. | Minimum. | Mean. | |
| May | 42 | 15 | 24 | D |
| June | 20 | 6 | 12 | D |
| July | 52 | 0.8 | 9.1 | C |
| August | 0.8 | 0.4 | 0.6 | C |
| September | 250 | 0.4 | 33 | D |

CAPILANO CREEK (1023).

Location.—Just above the Vancouver intake about 6 miles from the mouth of the creek.

Records Available.—Daily discharges from November, 1913, to date.

Drainage Area.—Fifty-five square miles, estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Vertical staff, readings twice a day.

Channel.—Rocky bed, water swift at high stages. At low water a small temporary dam is sometimes placed in the channel below the gauge. The gauge readings have been corrected to allow for the backwater caused by it.

Discharge Measurements.—Eight meter measurements during 1914.

Winter Flow.—Open water all year.

Accuracy.—C.

Co-operation.—Gauge readings taken by employees of the Vancouver Waterworks Department.

DISCHARGE MEASUREMENTS of Capilano Creek above city intake, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| April 23..... | H. J. E. Keys, F. MacLachlan and C. G. Cline..... | 1057 | 89 | 344 | 2.17 | 5-10 | 745 |
| May 28..... | C. G. Cline..... | 1521 | 90 | 354 | 2-10 | 5-15 | 717 |
| June 19..... | do..... | 1933 | 86 | 343 | 1-91 | 5-10 | 633 |
| Aug. 13..... | do..... | 1933 | 60 | 92 | 1-10 | 4-10 | 100 ¹ |
| Sept. 9..... | do..... | 1933 | 59 | 95 | 1-10 | 4-70 | 102 ¹ |
| Oct. 8..... | C. E. Webb..... | 1057 | 82 | 115 | 1-66 | 4-05 | 191 |
| " 19..... | H. C. Hughes..... | 1057 | 113 | 529 | 7-85 | 7-70 | 4,100 |
| " 26..... | do..... | 1933 | 54 | 206 | 2-00 | 4-40 | 407 |

¹ Affected by backwater from dam.

DAILY GAUGE HEIGHT AND DISCHARGE of Capilano Creek at Intake for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 6-00 | 1,570 | 5-05 | 700 | 7-75 | 4,250 | 4-50 | 400 | 5-80 | 1,350 | 6-05 | 1,630 |
| 2..... | 6-65 | 2,420 | 4-85 | 580 | 6-55 | 2,300 | 5-70 | 1,250 | 6-15 | 1,760 | 5-95 | 1,500 |
| 3..... | 6-80 | 2,650 | 4-75 | 520 | 6-50 | 2,230 | 5-75 | 1,300 | 5-85 | 1,400 | 5-65 | 1,200 |
| 4..... | 10-10 | 8,350 | 4-55 | 420 | 5-75 | 1,300 | 6-00 | 1,580 | 5-40 | 950 | 5-15 | 770 |
| 5..... | 9-25 | 6,900 | 4-50 | 400 | 5-50 | 1,050 | 6-60 | 2,350 | 5-25 | 840 | 4-75 | 520 |
| 6..... | 10-40 | 8,900 | 4-50 | 400 | 5-35 | 900 | 5-80 | 1,350 | 5-40 | 950 | 4-55 | 420 |
| 7..... | 7-55 | 3,900 | 4-50 | 400 | 5-15 | 750 | 5-20 | 800 | 5-40 | 950 | 5-33 | 900 |
| 8..... | 7-10 | 3,120 | 4-50 | 400 | 5-60 | 1,150 | 5-60 | 1,150 | 5-60 | 1,150 | 5-17 | 780 |
| 9..... | 7-15 | 3,200 | 4-50 | 400 | 5-50 | 1,050 | 5-70 | 1,250 | 5-50 | 1,050 | 5-60 | 660 |
| 10..... | 6-95 | 2,870 | 4-50 | 400 | 5-30 | 870 | 5-70 | 1,250 | 5-25 | 840 | 4-92 | 610 |
| 11..... | 6-15 | 1,760 | 4-65 | 470 | 5-50 | 1,050 | 5-60 | 1,150 | 5-45 | 1,000 | 5-08 | 670 |
| 12..... | 5-85 | 1,400 | 4-85 | 580 | 5-60 | 1,150 | 5-50 | 1,050 | 5-65 | 1,200 | 5-25 | 840 |
| 13..... | 5-90 | 1,480 | 5-00 | 660 | 5-75 | 1,300 | 7-05 | 3,050 | 6-05 | 1,630 | 5-25 | 840 |
| 14..... | 5-65 | 1,200 | 5-05 | 700 | 7-70 | 4,150 | 6-75 | 2,570 | 6-15 | 1,760 | 5-50 | 1,050 |
| 15..... | 5-35 | 900 | 5-10 | 720 | 5-55 | 1,100 | 6-70 | 2,500 | 6-00 | 1,580 | 6-00 | 1,580 |
| 16..... | 6-80 | 2,650 | 5-10 | 720 | 5-50 | 1,050 | 5-85 | 1,400 | 5-65 | 1,200 | 5-92 | 1,500 |
| 17..... | 5-95 | 1,530 | 5-10 | 720 | 5-70 | 1,250 | 5-45 | 1,000 | 5-50 | 1,050 | 5-67 | 1,220 |
| 18..... | 5-90 | 1,480 | 5-10 | 720 | 5-50 | 1,050 | 5-85 | 1,400 | 5-45 | 1,000 | 5-58 | 1,120 |
| 19..... | 5-70 | 1,250 | 5-20 | 800 | 5-70 | 1,250 | 5-25 | 1,900 | 5-35 | 900 | 5-17 | 780 |
| 20..... | 5-20 | 800 | 5-20 | 800 | 5-95 | 1,500 | 5-80 | 1,350 | 5-75 | 1,300 | 4-96 | 630 |
| 21..... | 5-10 | 720 | 5-35 | 900 | 5-85 | 1,400 | 5-30 | 870 | 6-00 | 1,580 | 5-17 | 780 |
| 22..... | 4-95 | 630 | 6-15 | 1,750 | 5-70 | 1,250 | 5-15 | 760 | 6-10 | 1,700 | 5-17 | 780 |
| 23..... | 4-80 | 550 | 6-25 | 1,900 | 5-15 | 760 | 5-15 | 760 | 6-00 | 1,580 | 5-00 | 660 |
| 24..... | 4-80 | 550 | 6-95 | 2,880 | 4-95 | 630 | 5-20 | 800 | 5-50 | 1,050 | 5-00 | 660 |
| 25..... | 5-55 | 1,100 | 5-90 | 1,480 | 4-75 | 520 | 4-85 | 580 | 5-85 | 1,400 | 5-83 | 1,400 |
| 26..... | 6-30 | 1,950 | 5-50 | 1,050 | 4-65 | 470 | 4-75 | 520 | 6-05 | 1,760 | 5-25 | 840 |
| 27..... | 5-10 | 730 | 6-15 | 1,750 | 4-60 | 450 | 4-90 | 600 | 5-85 | 1,400 | 5-08 | 670 |
| 28..... | 4-90 | 690 | 5-70 | 1,250 | 4-50 | 400 | 4-80 | 550 | 5-20 | 800 | 5-08 | 670 |
| 29..... | 4-75 | 520 | 4-70 | ..... | 4-70 | 500 | 4-70 | 500 | 4-85 | 580 | 5-46 | 1,000 |
| 30..... | 5-35 | 900 | ..... | ..... | 4-60 | 450 | 5-05 | 690 | 4-95 | 630 | 5-62 | 1,170 |
| 31..... | 5-05 | 700 | ..... | ..... | 4-55 | 420 | ..... | ..... | 5-75 | 1,300 | ..... | ..... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Capilano Creek at Intake for 1914
—Con.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5-67 | 1,220 | 3-46 | 80 | 3-17 | 80 | 4-9 | 600 | 9-0 | 6,400 | 5-1 | 725 |
| 2 | 5-75 | 1,300 | 3-46 | 80 | 3-07 | 55 | 5-5 | 1,050 | 8-7 | 5,900 | 4-8 | 550 |
| 3 | 5-46 | 1,000 | 3-42 | 80 | 3-12 | 55 | 4-8 | 550 | 6-2 | 1,825 | 4-8 | 550 |
| 4 | 5-04 | 680 | 3-33 | 70 | 3-07 | 55 | 4-2 | 275 | 7-0 | 2,950 | 4-6 | 450 |
| 5 | 4-79 | 550 | 3-37 | 70 | 2-82 | 40 | 4-1 | 240 | 5-6 | 1,150 | 4-3 | 315 |
| 6 | 4-75 | 520 | 3-76 | 140 | 2-95 | 45 | 4-0 | 205 | 5-2 | 800 | 4-2 | 275 |
| 7 | 4-67 | 490 | 3-80 | 150 | 2-95 | 45 | 4-0 | 205 | 5-3 | 875 | 4-1 | 240 |
| 8 | 4-62 | 460 | 3-88 | 170 | 3-95 | 190 | 3-9 | 175 | 7-4 | 3,600 | 4-0 | 205 |
| 9 | 4-46 | 380 | 3-67 | 120 | 3-45 | 80 | 3-9 | 175 | 6-2 | 1,800 | 4-0 | 205 |
| 10 | 4-47 | 370 | 3-56 | 100 | 3-74 | 135 | 4-1 | 240 | 5-9 | 1,500 | 3-9 | 175 |
| 11 | 4-47 | 370 | 3-60 | 105 | 3-70 | 125 | 4-3 | 315 | 6-0 | 1,600 | 3-8 | 150 |
| 12 | 4-47 | 370 | 3-60 | 105 | 3-37 | 70 | 8-0 | 4,700 | 5-2 | 800 | 3-8 | 150 |
| 13 | 4-34 | 330 | 3-60 | 105 | 3-16 | 60 | 8-5 | 5,600 | 5-0 | 660 | 3-6 | 105 |
| 14 | 4-42 | 360 | 3-60 | 105 | 3-45 | 80 | 5-8 | 1,350 | 4-6 | 450 | 3-6 | 105 |
| 15 | 4-30 | 315 | 3-60 | 105 | 3-95 | 190 | 5-1 | 725 | 4-2 | 275 | 3-6 | 105 |
| 16 | 4-13 | 250 | 3-60 | 105 | 3-53 | 90 | 9-0 | 6,400 | 4-2 | 275 | 3-7 | 125 |
| 17 | 4-30 | 315 | 3-52 | 90 | 4-12 | 250 | 8-1 | 4,900 | 4-1 | 240 | 3-5 | 85 |
| 18 | 4-38 | 350 | 3-32 | 70 | 7-65 | 4,060 | 10-2 | 8,500 | 4-0 | 205 | 3-5 | 85 |
| 19 | 4-34 | 330 | 3-40 | 75 | 8-52 | 5,620 | 8-3 | 5,200 | 5-4 | 950 | 3-3 | 65 |
| 20 | 3-92 | 180 | 3-40 | 75 | 6-32 | 1,970 | 6-7 | 2,500 | 5-2 | 800 | 3-3 | 65 |
| 21 | 3-76 | 140 | 3-40 | 75 | 5-19 | 790 | 5-8 | 1,350 | 5-4 | 950 | 3-3 | 65 |
| 22 | 3-72 | 130 | 3-40 | 75 | 4-52 | 410 | 5-1 | 725 | 5-5 | 1,350 | 3-2 | 60 |
| 23 | 3-84 | 160 | 3-40 | 75 | 4-19 | 270 | 4-8 | 550 | 6-5 | 2,225 | 3-2 | 60 |
| 24 | 3-88 | 170 | 3-32 | 70 | 4-07 | 235 | 4-2 | 275 | 6-5 | 2,225 | 3-1 | 55 |
| 25 | 3-88 | 170 | 3-32 | 70 | 3-90 | 175 | 4-2 | 275 | 6-8 | 2,650 | 3-1 | 55 |
| 26 | 3-97 | 200 | 3-32 | 70 | 4-82 | 560 | 4-2 | 275 | 6-0 | 1,575 | 3-2 | 60 |
| 27 | 3-76 | 140 | 3-26 | 65 | 5-57 | 1,120 | 4-2 | 275 | 6-0 | 1,575 | 3-4 | 75 |
| 28 | 3-67 | 120 | 3-30 | 65 | 5-40 | 950 | 4-1 | 240 | 6-4 | 2,075 | 3-4 | 75 |
| 29 | 3-46 | 80 | 3-30 | 65 | 4-82 | 560 | 4-0 | 205 | 5-4 | 950 | 4-3 | 315 |
| 30 | 3-50 | 85 | 3-30 | 65 | 4-98 | 650 | 5-4 | 950 | 5-0 | 660 | 4-5 | 400 |
| 31 | 3-50 | 85 | 3-30 | 65 | | | 6-5 | 2,225 | | | 4-5 | 400 |

MONTHLY DISCHARGE of Capilano Creek at Intake for 1914.

(Drainage area, 55 square miles).

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January | 8,900 | 520 | 2,170 | 39-50 | 45-50 | 133,000 | C |
| February | 2,800 | 400 | 875 | 15-90 | 16-60 | 48,600 | C |
| March | 4,250 | 400 | 1,225 | 22-30 | 25-70 | 75,300 | C |
| April | 3,050 | 400 | 1,220 | 22-20 | 24-80 | 72,600 | C |
| May | 1,760 | 580 | 1,215 | 22-10 | 25-50 | 74,700 | C |
| June | 1,630 | 420 | 930 | 16-90 | 18-90 | 55,300 | C |
| July | 1,300 | 80 | 375 | 6-82 | 7-80 | 23,100 | C |
| August | 170 | 65 | 90 | 1-63 | 1-88 | 5,500 | C |
| September | 5,620 | 40 | 635 | 11-55 | 12-90 | 37,800 | C |
| October | 8,500 | 175 | 1,655 | 30-10 | 34-70 | 101,000 | C |
| November | 6,400 | 205 | 1,645 | 29-90 | 33-40 | 97,700 | C |
| December | 725 | 55 | 205 | 37-30 | 43-00 | 12,600 | C |
| The year | 8,900 | 55 | 1,020 | 21-85 | 290-68 | 737,300 | C |

CHEHALIS RIVER (1003).

Location.—One and a half miles from the mouth, in section 14, township 4, range 30, west of the 6th meridian.

Records Available.—Continuous records since March, 1912.

Drainage Area.—Two hundred square miles.

Gauge.—Chain gauge suspended over river by pole spiked to two trees and held in position by a stay wire from the top of one of the trees.

Channel.—Rocky bed, water swift at higher stages.

Discharge measurements.—Ten discharge measurements during 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—Below 3,000 cubic feet per second, "B". Above 3,000 cubic feet per second, "C".

DISCHARGE MEASUREMENTS of Chehalis River at 1½ miles from mouth, 1911-12-13-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of section. | Mean velocity. | Gauge height. | Discharge. |
|----------|---------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec. ft. |
| 1911. | | | | | | | |
| Dec. 14 | N. M. Smith | 1057 | 105 | 573 | 3.74 | 3.80 | 1,021 |
| 1912. | | | | | | | |
| Mar. 8 | C. G. Cline | 1046 | 110 | 162 | 1.82 | 2.70 | 295 |
| July 15 | do | 1046 | 123 | 221 | 2.42 | 3.07 | 535 |
| Sept. 11 | do | 1046 | 105 | 248 | 2.40 | 2.90 | 594 |
| Nov. 23 | do | 1048 | 140 | 600 | 4.85 | 4.95 | 2,910 |
| Dec. 4 | do | 1048 | 130 | 343 | 3.56 | 3.92 | 1,220 |
| 1913. | | | | | | | |
| May 21 | do | 1044 | 145 | 460 | 3.90 | 4.40 | 1,810 |
| Sept. 8 | do | 1055 | 145 | 395 | 3.95 | 4.40 | 1,560 |
| 1914. | | | | | | | |
| May 22 | do | 1521 | 143 | 423 | 4.20 | 4.50 | 1,730 |
| Aug. 25 | do | 1933 | 100 | 180 | 1.10 | 2.60 | 188 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Chehalis River one mile from mouth
for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 3.9 | 1,140 | 4.3 | 1,550 | 6.4 | 9,600 | 4.8 | 2,450 | 4.6 | 2,000 | 4.1 | 1,320 |
| 2 | 3.8 | 1,060 | 4.2 | 1,430 | 5.7 | 6,250 | 4.7 | 2,200 | 4.55 | 1,910 | 4.05 | 1,280 |
| 3 | 3.7 | 980 | 4.05 | 1,270 | 5.2 | 3,850 | 4.8 | 2,450 | 4.5 | 1,820 | 4.0 | 1,230 |
| 4 | 6.6 | 10,600 | 3.9 | 1,140 | 5.0 | 3,100 | 4.9 | 2,750 | 4.6 | 2,000 | 4.1 | 1,320 |
| 5 | 8.0 | 17,000 | 3.8 | 1,060 | 4.7 | 2,200 | 5.2 | 3,850 | 4.6 | 2,000 | 4.0 | 1,230 |
| 6 | 9.0 | 22,000 | 3.7 | 980 | 4.5 | 1,820 | 5.1 | 3,450 | 4.55 | 1,910 | 4.0 | 1,230 |
| 7 | 8.0 | 17,000 | 3.8 | 1,060 | 4.4 | 1,670 | 4.95 | 2,920 | 4.5 | 1,820 | 4.1 | 1,320 |
| 8 | 6.4 | 9,600 | 3.7 | 980 | 4.5 | 1,820 | 4.8 | 2,450 | 4.45 | 1,750 | 4.0 | 1,230 |
| 9 | 6.0 | 7,700 | 3.6 | 900 | 4.6 | 2,000 | 4.7 | 2,200 | 4.4 | 1,670 | 3.9 | 1,140 |
| 10 | 5.5 | 5,300 | 3.6 | 900 | 4.6 | 2,000 | 4.6 | 2,000 | 4.6 | 2,000 | 3.95 | 1,180 |
| 11 | 5.2 | 3,850 | 3.7 | 980 | 4.5 | 1,820 | 4.5 | 1,820 | 5.0 | 3,100 | 4.0 | 1,230 |
| 12 | 5.1 | 3,450 | 3.7 | 980 | 4.4 | 1,670 | 4.5 | 1,820 | 4.8 | 2,450 | 4.0 | 1,230 |
| 13 | 5.0 | 3,100 | 3.8 | 1,060 | 4.5 | 1,820 | 4.6 | 2,000 | 4.8 | 2,450 | 3.95 | 1,180 |
| 14 | 5.0 | 3,100 | 3.8 | 1,060 | 6.5 | 10,100 | 4.8 | 2,450 | 4.75 | 2,320 | 3.95 | 1,180 |
| 15 | 4.8 | 2,450 | 3.8 | 1,060 | 5.7 | 6,250 | 6.7 | 11,000 | 4.70 | 2,200 | 3.9 | 1,140 |
| 16 | 4.7 | 2,200 | 3.8 | 1,060 | 6.0 | 7,700 | 5.7 | 6,250 | 4.65 | 2,100 | 3.9 | 1,140 |
| 17 | 4.6 | 2,000 | 3.7 | 980 | 6.5 | 10,100 | 5.4 | 4,850 | 4.60 | 2,000 | 3.85 | 1,100 |
| 18 | 4.5 | 1,820 | 3.6 | 900 | 5.8 | 6,700 | 5.6 | 5,800 | 4.50 | 1,820 | 3.8 | 1,060 |
| 19 | 4.3 | 1,550 | 3.6 | 900 | 5.6 | 5,800 | 6.9 | 12,000 | 4.40 | 1,670 | 3.8 | 1,060 |
| 20 | 4.1 | 1,320 | 3.6 | 900 | 5.4 | 4,850 | 5.8 | 6,700 | 4.50 | 1,820 | 3.85 | 1,100 |
| 21 | 3.9 | 1,140 | 3.75 | 1,020 | 5.2 | 3,850 | 5.5 | 5,300 | 4.5 | 1,820 | 3.9 | 1,140 |
| 22 | 4.0 | 1,230 | 5.2 | 3,850 | 5.1 | 3,450 | 5.3 | 4,350 | 4.55 | 1,910 | 3.75 | 1,020 |
| 23 | 4.1 | 1,320 | 5.0 | 3,100 | 4.85 | 2,600 | 5.0 | 3,100 | 4.5 | 1,820 | 3.6 | 900 |
| 24 | 4.0 | 1,230 | 5.0 | 3,100 | 4.8 | 2,450 | 4.8 | 2,450 | 4.5 | 1,820 | 3.55 | 860 |
| 25 | 3.8 | 1,060 | 4.8 | 2,450 | 5.0 | 3,100 | 4.7 | 2,200 | 4.6 | 2,000 | 3.7 | 980 |
| 26 | 3.9 | 1,140 | 4.7 | 2,200 | 4.9 | 2,750 | 4.6 | 2,000 | 4.8 | 2,450 | 3.8 | 1,060 |
| 27 | 4.0 | 1,230 | 5.3 | 4,350 | 4.7 | 2,200 | 4.5 | 1,820 | 4.9 | 2,750 | 3.8 | 1,060 |
| 28 | 3.9 | 1,140 | 4.9 | 2,750 | 4.5 | 1,820 | 4.45 | 1,750 | 4.5 | 1,820 | 3.8 | 1,060 |
| 29 | 4.0 | 1,230 | | | 4.35 | 1,610 | 4.5 | 1,820 | 4.2 | 1,430 | 3.7 | 980 |
| 30 | 4.3 | 1,550 | | | 4.2 | 1,430 | 4.6 | 2,000 | 4.15 | 1,370 | 3.65 | 940 |
| 31 | 4.4 | 1,670 | | | 4.2 | 1,430 | | | 4.1 | 1,320 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Chehalis River one mile from mouth for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3-75 | 1,020 | 2-8 | 350 | 2-50 | 200 | 3-8 | 1,060 | 6-0 | 7,700 | 4-7 | 2,200 |
| 2..... | 3-8 | 1,060 | 2-8 | 350 | 2-45 | 170 | 3-7 | 980 | 6-2 | 5,700 | 4-5 | 1,820 |
| 3..... | 3-8 | 1,060 | 2-8 | 350 | 2-4 | 150 | 3-5 | 820 | 6-0 | 7,700 | 4-3 | 1,550 |
| 4..... | 3-8 | 1,060 | 2-8 | 350 | 2-4 | 150 | 3-4 | 750 | 6-5 | 10,100 | 4-2 | 1,430 |
| 5..... | 3-8 | 1,060 | 2-8 | 350 | 2-4 | 150 | 3-3 | 670 | 5-9 | 7,200 | 4-05 | 1,270 |
| 6..... | 3-7 | 980 | 2-75 | 320 | 2-35 | 120 | 3-25 | 630 | 5-4 | 4,850 | 3-85 | 1,100 |
| 7..... | 3-65 | 940 | 2-75 | 320 | 2-35 | 120 | 3-2 | 600 | 5-2 | 3,850 | 3-7 | 980 |
| 8..... | 3-6 | 900 | 2-8 | 350 | 2-4 | 150 | 3-2 | 600 | 5-3 | 4,350 | 3-6 | 900 |
| 9..... | 3-5 | 820 | 2-75 | 320 | 2-6 | 250 | 3-2 | 600 | 5-4 | 4,850 | 3-5 | 820 |
| 10..... | 3-4 | 750 | 2-65 | 270 | 3-0 | 470 | 3-25 | 630 | 5-5 | 5,300 | 3-4 | 750 |
| 11..... | 3-3 | 670 | 2-55 | 220 | 2-9 | 410 | 3-3 | 670 | 5-9 | 7,200 | 3-35 | 710 |
| 12..... | 3-3 | 670 | 2-55 | 220 | 2-8 | 350 | 4-2 | 1,430 | 5-4 | 4,850 | 3-20 | 600 |
| 13..... | 3-35 | 710 | 2-6 | 250 | 2-8 | 350 | 3-8 | 1,060 | 5-2 | 3,850 | 3-2 | 600 |
| 14..... | 3-4 | 750 | 2-6 | 250 | 3-0 | 470 | 4-0 | 1,230 | 4-9 | 2,750 | 3-15 | 570 |
| 15..... | 3-35 | 710 | 2-65 | 270 | 3-4 | 750 | 3-9 | 1,140 | 4-7 | 2,200 | 3-15 | 570 |
| 16..... | 3-3 | 670 | 2-65 | 270 | 3-7 | 980 | 4-9 | 2,750 | 4-3 | 1,550 | 3-1 | 540 |
| 17..... | 3-3 | 670 | 2-7 | 300 | 4-0 | 1,230 | 5-2 | 3,850 | 4-0 | 1,230 | 3-1 | 540 |
| 18..... | 3-25 | 630 | 2-7 | 300 | 5-6 | 5,800 | 5-6 | 5,800 | 4-2 | 1,430 | 3-05 | 500 |
| 19..... | 3-2 | 600 | 2-65 | 270 | 4-8 | 2,450 | 6-4 | 9,600 | 4-6 | 2,000 | 3-0 | 470 |
| 20..... | 3-2 | 600 | 2-6 | 250 | 4-7 | 2,200 | 6-0 | 7,700 | 4-8 | 2,450 | 2-95 | 440 |
| 21..... | 3-15 | 570 | 2-6 | 250 | 4-5 | 1,820 | 5-3 | 4,350 | 4-7 | 2,200 | 2-85 | 380 |
| 22..... | 3-1 | 540 | 2-6 | 250 | 4-1 | 1,320 | 4-8 | 2,450 | 4-8 | 2,450 | 2-8 | 350 |
| 23..... | 3-1 | 540 | 2-6 | 250 | 3-8 | 1,060 | 4-5 | 1,820 | 5-2 | 3,850 | 2-75 | 320 |
| 24..... | 3-05 | 500 | 2-6 | 250 | 3-7 | 980 | 4-3 | 1,550 | 5-0 | 3,100 | 2-75 | 320 |
| 25..... | 3-0 | 470 | 2-6 | 250 | 3-6 | 900 | 4-0 | 1,230 | 6-0 | 7,700 | 2-8 | 350 |
| 26..... | 3-0 | 470 | 2-6 | 250 | 3-65 | 940 | 3-8 | 1,060 | 5-6 | 5,800 | 2-9 | 410 |
| 27..... | 2-95 | 440 | 2-55 | 225 | 4-5 | 1,820 | 3-7 | 980 | 5-4 | 4,850 | 2-9 | 410 |
| 28..... | 2-9 | 410 | 2-55 | 225 | 4-3 | 1,550 | 3-6 | 900 | 5-3 | 4,350 | 2-95 | 440 |
| 29..... | 2-85 | 380 | 2-5 | 200 | 4-0 | 1,230 | 3-6 | 900 | 5-1 | 3,450 | 3-0 | 470 |
| 30..... | 2-8 | 350 | 2-45 | 170 | 3-9 | 1,140 | 3-8 | 1,060 | 4-8 | 2,450 | 2-9 | 410 |
| 31..... | 2-8 | 350 | 2-4 | 150 | ..... | ..... | 5-3 | 4,350 | ..... | ..... | 2-95 | 440 |

MONTHLY DISCHARGE of Chehalis River one mile from mouth for 1914.

(Drainage area, 200 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 22,000 | 980 | 4,230 | 21-15 | 24-37 | 260,000 | C |
| February..... | 4,350 | 900 | 1,570 | 7-85 | 8-17 | 87,200 | B |
| March..... | 10,100 | 1,430 | 3,800 | 19-00 | 21-90 | 234,000 | C |
| April..... | 12,060 | 1,750 | 3,610 | 18-05 | 20-13 | 215,000 | C |
| May..... | 3,100 | 1,320 | 1,980 | 9-90 | 11-41 | 122,000 | B |
| June..... | 1,520 | 890 | 1,130 | 5-65 | 6-30 | 67,000 | B |
| July..... | 1,060 | 350 | 690 | 3-45 | 3-98 | 42,400 | B |
| August..... | 350 | 150 | 270 | 1-35 | 1-56 | 16,600 | B |
| September..... | 5,800 | 120 | 990 | 4-95 | 5-52 | 58,900 | B |
| October..... | 9,600 | 600 | 2,040 | 10-20 | 11-76 | 125,400 | C |
| November..... | 10,100 | 1,230 | 4,480 | 22-40 | 25-00 | 267,000 | C |
| December..... | 2,200 | 320 | 730 | 3-65 | 4-21 | 44,900 | B |
| The year..... | 22,000 | 120 | 2,130 | 10-65 | 144-30 | 1,540,600 | C |

SESSIONAL PAPER No. 25e

CHILLIWACK RIVER (1004).

Location.—Five miles above Sumas lake in section 1, township 23, east of Coast meridian.

Records Available.—Daily discharges continuous since November, 1911.

Drainage Area.—Four hundred and fifty square miles, of which about 100 is in the State of Washington.

Gauge.—Vertical staff on rock filled crib. Readings daily.

Channel.—Rocky bottom, good control, water deep; swift at high stages.

Discharge Measurements.—Fifteen meter measurements made during 1911, 1912, 1913, and 1914.

Winter Flow.—Open water all year.

Accuracy.—A.

DISCHARGE MEASUREMENTS of Chilliwack River near Vedder River Hotel, 1911-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1911. | | | | | | | |
| Dec. 18..... | Smith..... | 1037 | 76 | 451.2 | 2.61 | 1.70 | 1,180 |
| 1912. | | | | | | | |
| Mar. 21..... | C. G. Cline..... | 1046 | 65 | 424.0 | 1.76 | 1.00 | 750 |
| " 22..... | do..... | 1046 | 65 | 508.5 | 1.52 | 1.00 | 770 |
| July 8..... | do..... | 1046 | 85 | 658.0 | 4.69 | 2.90 | 3,090 |
| Aug. 30..... | do..... | 1046 | 65 | 552.0 | 2.03 | 1.60 | 1,120 |
| Nov. 21..... | do..... | 1048 | 85 | 684.0 | 5.32 | 3.15 | 3,540 |
| 1913. | | | | | | | |
| June 5..... | K. G. Chisholm..... | 1055 | 165 | 969.0 | 8.90 | 5.00 | 8,640 |
| July 13..... | H. J. E. Keys..... | 1055 | 155 | 710.0 | 7.41 | 4.05 | 5,270 |
| 1914. | | | | | | | |
| Jan. 10..... | do..... | 1046 | 110 | 816.0 | 5.47 | 3.65 | 4,450 |
| " 12..... | do..... | 1046 | 100 | 718.0 | 4.31 | 2.80 | 3,090 |
| " 13..... | do..... | 1046 | 105 | 740.0 | 4.49 | 2.98 | 3,320 |
| " 15..... | do..... | 1046 | 95 | 790.0 | 3.70 | 2.70 | 2,920 |
| " 17..... | do..... | 1046 | 95 | 780.0 | 3.27 | 2.54 | 2,550 |
| " 22..... | do..... | 1046 | 94 | 665.0 | 3.04 | 2.27 | 2,020 |
| " 23..... | do..... | 1046 | 90 | 718.0 | 2.63 | 2.05 | 1,893 |

DAILY GAUGE HEIGHT AND DISCHARGE of Chilliwack River near Sumas Lake for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-4 | 1,000 | 1-9 | 1,550 | 2-6 | 2,650 | 2-0 | 1,700 | 2-6 | 2,650 | 3-6 | 4,400 |
| 2..... | 1-3 | 900 | 1-85 | 1,470 | 2-4 | 2,300 | 2-1 | 1,850 | 3-25 | 3,770 | 4-25 | 5,900 |
| 3..... | 1-3 | 900 | 1-8 | 1,400 | 2-3 | 2,150 | 2-2 | 2,000 | 4-0 | 5,300 | 3-9 | 5,000 |
| 4..... | 2-1 | 1,850 | 1-75 | 1,350 | 2-2 | 2,000 | 2-6 | 2,650 | 3-45 | 4,100 | 3-6 | 4,400 |
| 5..... | 4-65 | 7,300 | 1-5 | 1,100 | 2-0 | 1,700 | 2-95 | 3,220 | 3-3 | 3,850 | 3-25 | 3,770 |
| 6..... | 7-3 | 20,000 | 1-45 | 1,050 | 1-9 | 1,550 | 2-8 | 3,000 | 3-2 | 3,700 | 3-0 | 3,300 |
| 7..... | 6-6 | 16,000 | 1-5 | 1,100 | 1-8 | 1,400 | 2-7 | 2,800 | 3-1 | 3,500 | 2-9 | 3,150 |
| 8..... | 6-0 | 13,000 | 1-55 | 1,150 | 1-85 | 1,470 | 2-75 | 2,900 | 3-05 | 3,400 | 2-85 | 3,070 |
| 9..... | 5-5 | 10,900 | 1-5 | 1,100 | 1-85 | 1,470 | 2-8 | 3,000 | 3-1 | 3,500 | 2-7 | 2,800 |
| 10..... | 4-9 | 8,300 | 1-5 | 1,100 | 1-9 | 1,550 | 2-85 | 3,070 | 3-15 | 3,600 | 2-8 | 3,000 |
| 11..... | 3-7 | 4,600 | 1-5 | 1,100 | 1-85 | 1,470 | 2-9 | 3,150 | 3-1 | 3,500 | 2-95 | 3,220 |
| 12..... | 3-3 | 3,850 | 1-45 | 1,050 | 1-8 | 1,400 | 2-85 | 3,070 | 3-2 | 3,700 | 3-05 | 3,400 |
| 13..... | 3-2 | 3,700 | 1-4 | 1,000 | 1-9 | 1,550 | 2-95 | 3,220 | 3-3 | 3,850 | 3-2 | 3,700 |
| 14..... | 3-1 | 3,500 | 1-45 | 1,050 | 2-5 | 2,500 | 3-1 | 3,500 | 3-7 | 4,600 | 3-3 | 3,850 |
| 15..... | 3-0 | 3,300 | 1-4 | 1,000 | 2-5 | 2,500 | 3-6 | 4,400 | 4-2 | 5,800 | 3-7 | 4,600 |
| 16..... | 3-0 | 3,300 | 1-45 | 1,050 | 2-7 | 2,800 | 3-3 | 3,850 | 4-0 | 5,300 | 4-0 | 5,300 |
| 17..... | 2-8 | 3,000 | 1-45 | 1,050 | 2-75 | 2,900 | 3-05 | 3,400 | 3-85 | 4,900 | 4-1 | 5,500 |
| 18..... | 2-7 | 2,800 | 1-4 | 1,000 | 2-85 | 3,070 | 3-10 | 3,500 | 3-6 | 4,400 | 4-0 | 5,300 |
| 19..... | 2-6 | 2,650 | 1-4 | 1,000 | 2-75 | 2,900 | 3-7 | 4,600 | 3-5 | 4,200 | 3-6 | 4,400 |
| 20..... | 2-5 | 2,500 | 1-45 | 1,050 | 2-8 | 3,000 | 3-6 | 4,400 | 3-55 | 4,300 | 3-4 | 4,000 |
| 21..... | 2-3 | 2,150 | 1-5 | 1,100 | 2-8 | 3,000 | 3-4 | 4,000 | 3-7 | 4,600 | 3-3 | 3,850 |
| 22..... | 2-2 | 2,000 | 1-6 | 1,200 | 2-85 | 3,070 | 3-1 | 3,500 | 3-9 | 5,000 | 3-4 | 4,000 |
| 23..... | 2-15 | 1,920 | 1-65 | 1,250 | 2-8 | 3,000 | 2-95 | 3,220 | 3-95 | 5,100 | 3-3 | 3,850 |
| 24..... | 2-05 | 1,770 | 1-6 | 1,200 | 2-75 | 2,900 | 2-85 | 3,070 | 4-0 | 5,300 | 3-25 | 3,775 |
| 25..... | 2-05 | 1,770 | 1-65 | 1,250 | 2-6 | 2,650 | 2-7 | 2,800 | 3-8 | 4,800 | 3-2 | 3,700 |
| 26..... | 2-1 | 1,850 | 1-6 | 1,200 | 2-5 | 2,500 | 2-65 | 2,720 | 3-6 | 4,400 | 3-15 | 3,600 |
| 27..... | 2-0 | 1,700 | 1-7 | 1,300 | 2-35 | 2,220 | 2-65 | 2,720 | 3-4 | 4,000 | 3-2 | 3,700 |
| 28..... | 1-9 | 1,550 | 1-9 | 1,550 | 2-3 | 2,150 | 2-6 | 2,650 | 3-3 | 3,850 | 3-25 | 3,775 |
| 29..... | 1-85 | 1,470 | ..... | ..... | 2-3 | 2,150 | 2-6 | 2,650 | 3-05 | 3,400 | 3-3 | 3,850 |
| 30..... | 1-95 | 1,620 | ..... | ..... | 2-15 | 1,920 | 2-55 | 2,570 | 3-0 | 3,300 | 3-4 | 4,000 |
| 31..... | 1-9 | 1,550 | ..... | ..... | 2-1 | 1,850 | ..... | ..... | 3-25 | 3,770 | ..... | ..... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Chilliwack River near Sumas Lake for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3-6 | 4,400 | 2-0 | 1,700 | 1-4 | 1,000 | 1-6 | 1,200 | 3-3 | 3,850 | 2-5 | 2,500 |
| 2..... | 3-65 | 4,500 | 2-0 | 1,700 | 1-35 | 950 | 1-65 | 1,250 | 3-8 | 4,800 | 2-8 | 3,000 |
| 3..... | 3-7 | 4,600 | 2-0 | 1,700 | 1-35 | 950 | 1-7 | 1,300 | 3-5 | 4,200 | 2-4 | 2,300 |
| 4..... | 3-6 | 4,400 | 2-0 | 1,700 | 1-3 | 900 | 1-6 | 1,200 | 3-4 | 4,000 | 2-3 | 2,150 |
| 5..... | 3-4 | 4,000 | 1-95 | 1,620 | 1-25 | 870 | 1-55 | 1,150 | 3-3 | 3,850 | 2-2 | 2,000 |
| 6..... | 3-25 | 3,770 | 1-9 | 1,550 | 1-2 | 850 | 1-5 | 1,100 | 3-2 | 3,700 | 2-2 | 2,000 |
| 7..... | 3-2 | 3,700 | 1-85 | 1,470 | 1-2 | 850 | 1-4 | 1,000 | 2-9 | 3,150 | 2-1 | 1,850 |
| 8..... | 3-2 | 3,700 | 1-8 | 1,400 | 1-45 | 1,050 | 1-35 | 950 | 2-8 | 3,000 | 2-0 | 1,700 |
| 9..... | 3-1 | 3,500 | 1-8 | 1,400 | 1-55 | 1,150 | 1-4 | 1,000 | 2-7 | 2,800 | 1-9 | 1,550 |
| 10..... | 3-2 | 3,700 | 1-75 | 1,350 | 1-55 | 1,150 | 1-45 | 1,050 | 2-8 | 3,000 | 1-8 | 1,400 |
| 11..... | 3-2 | 3,700 | 1-7 | 1,300 | 1-5 | 1,100 | 1-4 | 1,000 | 3-9 | 5,000 | 1-7 | 1,300 |
| 12..... | 3-25 | 3,770 | 1-7 | 1,300 | 1-4 | 1,000 | 1-35 | 950 | 3-4 | 4,000 | 1-65 | 1,250 |
| 13..... | 3-1 | 3,500 | 1-75 | 1,350 | 1-35 | 950 | 1-4 | 1,000 | 2-8 | 3,000 | 1-5 | 1,100 |
| 14..... | 3-05 | 3,400 | 1-75 | 1,350 | 1-4 | 1,000 | 1-45 | 1,050 | 2-6 | 2,650 | 1-55 | 1,150 |
| 15..... | 3-0 | 3,300 | 1-7 | 1,300 | 1-5 | 1,100 | 1-45 | 1,050 | 2-5 | 2,500 | 1-6 | 1,200 |
| 16..... | 3-1 | 3,500 | 1-75 | 1,350 | 1-55 | 1,150 | 1-5 | 1,100 | 2-4 | 2,300 | 1-55 | 1,150 |
| 17..... | 2-95 | 3,220 | 1-7 | 1,300 | 1-7 | 1,300 | 2-45 | 2,400 | 2-35 | 2,220 | 1-5 | 1,100 |
| 18..... | 2-9 | 3,150 | 1-7 | 1,300 | 2-5 | 2,500 | 2-6 | 2,650 | 2-4 | 2,300 | 1-45 | 1,050 |
| 19..... | 2-85 | 3,070 | 1-65 | 1,250 | 2-4 | 2,300 | 2-4 | 2,300 | 2-5 | 2,500 | 1-4 | 1,000 |
| 20..... | 2-8 | 3,000 | 1-65 | 1,250 | 2-3 | 2,150 | 2-25 | 2,070 | 2-6 | 2,650 | 1-4 | 1,000 |
| 21..... | 2-6 | 2,650 | 1-65 | 1,250 | 2-2 | 2,000 | 2-45 | 2,400 | 2-7 | 2,800 | 1-35 | 950 |
| 22..... | 2-45 | 2,400 | 1-6 | 1,200 | 2-1 | 1,850 | 2-3 | 2,150 | 2-6 | 2,650 | 1-35 | 950 |
| 23..... | 2-45 | 2,400 | 1-55 | 1,150 | 1-9 | 1,550 | 2-25 | 2,070 | 2-5 | 2,500 | 1-3 | 900 |
| 24..... | 2-4 | 2,300 | 1-55 | 1,150 | 1-8 | 1,400 | 2-2 | 2,000 | 2-45 | 2,400 | 1-3 | 900 |
| 25..... | 2-3 | 2,150 | 1-55 | 1,150 | 1-75 | 1,350 | 2-15 | 1,920 | 2-4 | 2,300 | 1-25 | 870 |
| 26..... | 2-25 | 2,070 | 1-55 | 1,150 | 1-8 | 1,400 | 2-1 | 1,850 | 2-8 | 3,000 | 1-25 | 870 |
| 27..... | 2-2 | 2,000 | 1-5 | 1,100 | 1-9 | 1,550 | 1-75 | 1,350 | 2-75 | 2,900 | 1-2 | 850 |
| 28..... | 2-2 | 2,000 | 1-5 | 1,100 | 1-8 | 1,400 | 1-75 | 1,350 | 2-7 | 2,800 | 1-25 | 870 |
| 29..... | 2-15 | 1,920 | 1-45 | 1,050 | 1-7 | 1,300 | 1-8 | 1,400 | 2-7 | 2,800 | 1-3 | 900 |
| 30..... | 2-1 | 1,850 | 1-45 | 1,050 | 1-75 | 1,350 | 2-0 | 1,700 | 2-6 | 2,650 | 1-3 | 900 |
| 31..... | 2-05 | 1,770 | 1-4 | 1,000 | ..... | ..... | 2-1 | 1,850 | ..... | ..... | 1-35 | 950 |

MONTHLY DISCHARGE of Chilliwack River near Sumas Lake for 1914.

(Drainage area, 450 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| January..... | 2,000 | 900 | 4,280 | 9-52 | 10-98 | 263,000 | B |
| February..... | 1,550 | 1,000 | 1,170 | 2-60 | 2-71 | 65,000 | A |
| March..... | 3,070 | 1,400 | 2,250 | 5-00 | 5-76 | 138,000 | A |
| April..... | 4,600 | 1,700 | 3,110 | 6-92 | 7-72 | 185,000 | A |
| May..... | 5,800 | 2,650 | 4,170 | 9-28 | 10-70 | 250,000 | A |
| June..... | 5,900 | 2,800 | 4,000 | 8-00 | 9-93 | 238,000 | A |
| July..... | 4,600 | 1,770 | 3,140 | 6-08 | 8-05 | 193,000 | A |
| August..... | 1,700 | 1,000 | 1,320 | 2-93 | 3-38 | 81,000 | A |
| September..... | 850 | 850 | 1,310 | 2-91 | 3-25 | 78,000 | A |
| October..... | 950 | 950 | 1,510 | 3-36 | 3-87 | 93,000 | A |
| November..... | 2,220 | 2,220 | 3,080 | 6-85 | 7-64 | 183,000 | A |
| December..... | 850 | 850 | 1,340 | 2-08 | 3-44 | 82,000 | A |
| The year..... | 20,000 | 850 | 2,580 | 5-09 | 77-43 | 1,855,000 | A |

COQUIHALLA RIVER (1005.)

Location.—Near mouth of river, not far from Hope, in section 10, township 5, range 26, west of the 6th meridian.

Records Available.—Continuous records since November, 1911.

Drainage Area.—Three hundred and sixty square miles.

Gauge.—Cable gauge on highway bridge. Readings two or three times a week.

Channel.—Bottom rocky and stream rather shallow; water swift at the higher stages.

Discharge Measurements.—Sixteen meter measurements made during 1912, 1913, and 1914.

Winter Flow.—In very cold weather, ice forms along the edges of the stream, with some anchor ice at the riffle which forms the control.

Accuracy.—C. Gauge readings only about three times a week.

DISCHARGE MEASUREMENTS of Coquihalla River near mouth, 1912-13-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------|--------------------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1912. | | | | | | | |
| June 8 | Cline & Corbould | 1046 | 149 | 597 | 4.8 | 3.30 | 2,880 |
| June 29 | C. G. Cline | 1046 | 122 | 275 | 3.2 | 1.90 | 890 |
| Sept. 13 | do | 1046 | 110 | 171 | 2.0 | 1.05 | 334 |
| Nov. 15 | do | 1048 | 120 | 276 | 2.8 | 1.65 | 762 |
| Nov. 18 | do | 1048 | 120 | 350 | 3.5 | 2.25 | 1,210 |
| Nov. 20 | do | 1048 | 120 | 386 | 3.9 | 2.45 | 1,510 |
| 1913. | | | | | | | |
| May 12 | C. G. Cline & K. G. Chisholm | 1044 | 150 | 576 | 5.7 | 3.50 | 3,140 |
| June 21 | C. G. Cline & K. G. Chisholm | 1044 | 154 | 540 | 5.8 | 3.65 | 3,040 |
| July 21 | K. G. Chisholm | 1055 | 122 | 378 | 3.7 | 2.60 | 1,410 |
| Sept. 9 | K. G. Chisholm & F. MacLachlan | 1055 | 119 | 383 | 3.7 | 2.70 | 1,440 |
| Oct. 13 | H. J. E. Keys | 1057 | 129 | 524 | 6.0 | 3.47 | 3,160 |
| 1914. | | | | | | | |
| July 9 | Cline & Hughes | 1933 | 125 | 299 | 3.0 | 1.90 | 858 |
| July 18 | C. G. Cline | 1933 | 120 | 224 | 2.5 | 1.60 | 553 |
| Aug. 28 | do | 1933 | 110 | 130 | 1.4 | 0.75 | 178 |
| Oct. 27 | H. C. Hughes | 1933 | 100 | 188 | 1.56 | 0.91 | 283 |
| Dec. 18 | do | 1521 | 80 | 206 | 1.47 | 1.68 | 300 ¹ |

¹Ice conditions.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE OF Coquihalla River near mouth.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 470 | 1-5 | 590 | 2-6 | 1,580 | | 1,100 | | 4,200 | 4-1 | 4,160 |
| 2 | | 470 | 1-5 | 590 | 2-3 | 1,240 | | 1,200 | 4-3 | 4,550 | 3-8 | 3,580 |
| 3 | 1-3 | 470 | | 550 | | 1,000 | 2-4 | 1,340 | | 4,000 | | 3,200 |
| 4 | | 1,000 | | 500 | | 900 | 2-3 | 1,240 | | 3,600 | | 2,900 |
| 5 | 3-4 | 2,840 | 1-3 | 470 | 1-7 | 730 | | 1,900 | 3-6 | 3,200 | 3-20 | 2,480 |
| 6 | 5-6 | 7,040 | 1-5 | 590 | 1-65 | 700 | 3-25 | 2,570 | | 3,200 | | 2,350 |
| 7 | 3-9 | 3,770 | | 560 | 1-6 | 660 | | 2,600 | | 3,200 | | 2,200 |
| 8 | 3-4 | 2,840 | | 540 | 1-9 | 890 | | 2,800 | 3-6 | 3,200 | 2-95 | 2,080 |
| 9 | | 2,500 | | 520 | | 810 | | 2,900 | | 3,600 | | 2,200 |
| 10 | | 2,000 | | 500 | 1-7 | 730 | 3-45 | 2,930 | | 4,000 | | 2,300 |
| 11 | | 1,500 | 1-3 | 470 | 1-8 | 810 | 3-5 | 3,020 | | 4,500 | 3-2 | 2,480 |
| 12 | 2-2 | 1,150 | | 470 | | 1,200 | | 3,300 | | 5,000 | | 2,800 |
| 13 | | 1,100 | 1-3 | 470 | | 2,000 | | 3,600 | | 5,400 | | 3,100 |
| 14 | | 1,100 | 1-3 | 470 | 3-2 | 2,480 | | 3,900 | 5-0 | 5,880 | | 3,400 |
| 15 | 2-1 | 1,060 | 1-45 | 560 | | 2,200 | 4-15 | 4,260 | 4-85 | 5,600 | 3-85 | 3,670 |
| 16 | | 1,030 | | 550 | 2-9 | 2,000 | | 4,300 | 4-5 | 4,930 | | 3,600 |
| 17 | 2-05 | 1,000 | | 530 | 3-8 | 3,580 | | 4,400 | | 4,400 | | 3,400 |
| 18 | 1-92 | 900 | | 520 | 3-4 | 2,840 | | 4,500 | 4-0 | 3,960 | 3-65 | 3,300 |
| 19 | 1-8 | 810 | | 500 | 3-3 | 2,660 | 4-3 | 4,550 | 3-8 | 3,580 | | 3,100 |
| 20 | | 810 | | 480 | 3-05 | 2,230 | | 3,400 | | 3,800 | 3-45 | 2,930 |
| 21 | 1-8 | 810 | 1-3 | 470 | 3-05 | 2,230 | 3-1 | 2,310 | 4-1 | 4,160 | 3-15 | 2,400 |
| 22 | | 800 | | 560 | 3-15 | 2,400 | | 2,200 | | 4,200 | | 2,300 |
| 23 | | 780 | 1-6 | 660 | | 2,200 | | 2,100 | | 4,250 | | 2,200 |
| 24 | | 760 | | 700 | | 2,000 | | 2,000 | | 4,300 | | 2,100 |
| 25 | | 740 | 1-7 | 730 | | 1,500 | 2-9 | 2,000 | 4-2 | 4,360 | | 2,000 |
| 26 | | 720 | | 730 | 2-4 | 1,340 | 2-95 | 2,080 | 3-8 | 3,580 | | 1,900 |
| 27 | | 700 | | 730 | | 1,250 | | 2,500 | 3-8 | 3,580 | | 1,800 |
| 28 | | 680 | 1-7 | 730 | 2-2 | 1,150 | | 3,000 | 3-4 | 2,840 | | 1,700 |
| 29 | | 670 | | | | 1,050 | | 3,500 | 3-25 | 2,570 | | 1,600 |
| 30 | 1-6 | 660 | | | 2-0 | 970 | | 4,000 | | 2,700 | | 1,500 |
| 31 | 1-6 | 660 | | | 2-0 | 970 | | | 3-45 | 2,930 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Coquihalla River near mouth for 1914

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 1,400 | 1-1 | 370 | | 220 | 1-05 | 350 | | 1,000 | | 1,200 |
| 2 | | 1,300 | | 350 | | 220 | | 380 | | 1,500 | | 1,150 |
| 3 | | 1,200 | | 350 | | 220 | 1-15 | 400 | 3-0 | 2,150 | 2-2 | 1,150 |
| 4 | | 1,100 | 1-0 | 320 | | 220 | | 370 | | 1,800 | | 1,100 |
| 5 | | 1,000 | | 320 | | 220 | 1-05 | 350 | | 1,500 | | 1,050 |
| 6 | | 900 | | 320 | | 220 | | 340 | 2-25 | 1,200 | | 1,000 |
| 7 | | 900 | | 320 | | 220 | | 320 | 2-1 | 1,060 | | 950 |
| 8 | | 900 | 1-0 | 320 | | 300 | | 300 | | 1,200 | | 900 |
| 9 | 1-9 | 890 | | 310 | 1-05 | 350 | | 300 | | 1,300 | | 850 |
| 10 | 1-95 | 930 | | 300 | | 400 | | 300 | 2-5 | 1,460 | 1-8 | 810 |
| 11 | | 900 | | 300 | 1-3 | 470 | | 300 | | 1,400 | | 800 |
| 12 | | 800 | | 300 | | 470 | | 300 | | 1,300 | | 750 |
| 13 | | 800 | | 300 | | 470 | | 300 | | 1,200 | | 700 |
| 14 | | 800 | | 290 | 1-3 | 470 | | 300 | 2-2 | 1,150 | 1-6 | 660 |
| 15 | | 700 | | 280 | 1-55 | 630 | | 270 | | 1,000 | | 600 |
| 16 | 1-6 | 660 | | 270 | | 700 | | 270 | | 900 | | 500 |
| 17 | 1-6 | 660 | | 260 | | 800 | | 300 | 1-8 | 810 | | 420 |
| 18 | 1-6 | 660 | | 250 | 1-95 | 930 | | 350 | | 900 | 1-7 | 300 |
| 19 | | 600 | | 250 | | 800 | | 400 | 2-1 | 1,060 | | 300 |
| 20 | | 600 | | 250 | | 700 | 1-25 | 450 | 2-55 | 1,520 | | 300 |
| 21 | 1-4 | 530 | | 250 | | 600 | | 450 | | 1,600 | | 300 |
| 22 | 1-3 | 470 | | 250 | | 500 | | 400 | | 1,800 | | 300 |
| 23 | 1-3 | 470 | | 250 | 1-15 | 400 | 1-15 | 400 | | 2,000 | | 300 |
| 24 | 1-25 | 450 | | 250 | 1-1 | 570 | | 400 | | 2,200 | 1-0 | 320 |
| 25 | | 450 | | 240 | | 350 | | 350 | | 2,400 | | 320 |
| 26 | 1-25 | 450 | | 240 | 1-00 | 320 | | 300 | 3-2 | 2,480 | | 310 |
| 27 | 1-05 | 350 | | 230 | | 400 | | 300 | | 2,000 | | 300 |
| 28 | | 350 | | 230 | 1-35 | 500 | | 300 | 2-5 | 1,460 | | 300 |
| 29 | | 370 | | 240 | | 450 | | 320 | | 1,300 | | 300 |
| 30 | 1-10 | 370 | | 230 | | 400 | 1-0 | 320 | 2-25 | 1,200 | | 300 |
| 31 | | 370 | | 220 | | | | 500 | | | | 290 |

MONTHLY DISCHARGE of Coquihalla River near mouth for 1914.

(Drainage area, 360 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| January | 7,040 | 470 | 1,350 | 3.75 | 4.32 | 83,000 | C |
| February | 730 | 470 | 560 | 1.56 | 1.62 | 31,100 | C |
| March | 3,580 | 660 | 1,560 | 4.34 | 5.00 | 95,900 | C |
| April | 4,550 | 1,100 | 2,850 | 7.92 | 8.84 | 170,000 | C |
| May | 5,880 | 2,570 | 3,980 | 11.07 | 12.75 | 245,000 | C |
| June | 4,160 | 1,500 | 2,630 | 7.31 | 8.16 | 156,500 | C |
| July | 1,400 | 350 | 720 | 2.00 | 2.31 | 44,300 | C |
| August | 370 | 220 | 279 | 0.78 | 0.90 | 17,200 | C |
| September | 930 | 220 | 444 | 1.23 | 1.37 | 26,400 | C |
| October | 500 | 270 | 345 | 0.96 | 1.11 | 21,200 | C |
| November | 2,480 | 810 | 1,460 | 4.06 | 4.53 | 86,900 | C |
| December | 1,200 | 290 | 674 | 1.87 | 2.16 | 41,400 | C |
| The year | 5,880 | 220 | 1,405 | 3.9 | 53.07 | 1,018,900 | C |

SESSIONAL PAPER No. 25e

FRASER RIVER (1007).

Location.—At Hope, in section 16, township 5, range 26, west of the 6th meridian.

Records Available.—Daily discharges, continuous since March, 1912.

Drainage Area.—Above gauging station, 85,600 square miles; above mouth, 90,000 square miles.

Gauge.—Painted on rock bluff at Kettle Valley Railway bridge; readings daily.

Channel.—Permanent channel, deep water; swift at higher stages.

Discharge Measurements.—Nine measurements during 1912, 1913, and 1914; some made with meter, some by floats.

Winter Flow.—Not usually ice enough to affect the gauge height-discharge relations.

Accuracy.—C.

Co-operation.—Gauge read by the engineers of the Kettle Valley Railroad.

DISCHARGE MEASUREMENTS of Fraser River at Hope, 1912-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------|------------|--------|------------------|----------------|---------------|----------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1912. | | | | | | | |
| March 5..... | C. G. Cline..... | 1046 | 690 | 14,405 | 1.3 | 10.0 | 18,300 ¹ |
| June 6..... | B. Corbould..... | 1046 | 1,000 | 19,835 | 6.8 | 21.0 | 147,000 |
| " 28..... | C. G. Cline..... | 1046 | 710 | 26,300 | 8.5 | 24.5 | 225,000 ² |
| Sept. 24..... | do..... | 1046 | 575 | 12,500 | 5.9 | 14.0 | 73,400 ² |
| " 26..... | do..... | 1046 | 885 | 17,200 | 4.0 | 14.7 | 70,000 ² |
| 1913. | | | | | | | |
| June 21..... | K. G. Chisholm..... | Floats.... | 1,016 | 27,100 | 10.2 | 26.0 | 278,000 ⁴ |
| 1914. | | | | | | | |
| July 10..... | Cline & Hughes..... | Floats.... | 1,110 | 25,300 | 10.3 | 24.0 | 234,000 ⁴ |
| Aug. 28..... | C. G. Cline..... | "..... | 951 | 18,200 | 6.2 | 16.8 | 101,000 ⁴ |
| Oct. 28..... | H. C. Hughes..... | "..... | 870 | 16,200 | 4.4 | 14.5 | 72,800 ⁴ |

¹ Section at gauge. ² Measured at Yale. ³ Section above gauge. ⁴ Float measurement.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Hope for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 50,000 | 11-0 | 28,000 | 11-8 | 36,000 | 11-5 | 33,000 | 17-6 | 108,000 | 23-3 | 206,000 |
| 2 | | 50,000 | 11-2 | 30,000 | 11-7 | 35,000 | 11-4 | 32,000 | 18-3 | 117,000 | 23-0 | 200,000 |
| 3 | | 50,000 | 11-2 | 30,000 | 11-5 | 33,000 | 11-5 | 33,000 | 19-1 | 129,000 | 23-1 | 202,000 |
| 4 | | 50,000 | 11-2 | 30,000 | 11-4 | 32,000 | 11-6 | 34,000 | 19-4 | 133,000 | 22-8 | 195,000 |
| 5 | 13-3 | 53,000 | 11-2 | 30,000 | 11-4 | 32,000 | 12-0 | 38,000 | 19-4 | 133,000 | 22-8 | 195,000 |
| 6 | 14-9 | 73,000 | 11-1 | 29,000 | 11-4 | 32,000 | 12-2 | 40,000 | 20-3 | 146,000 | 23-6 | 214,000 |
| 7 | 13-6 | 57,000 | 10-9 | 27,000 | 11-3 | 31,000 | 12-3 | 42,000 | 20-1 | 144,000 | 24-2 | 229,000 |
| 8 | 13-1 | 51,000 | 10-7 | 25,000 | 11-3 | 31,000 | 12-6 | 45,000 | 19-8 | 138,000 | 24-3 | 232,000 |
| 9 | 12-8 | 47,000 | 10-8 | 26,000 | 11-3 | 31,000 | 12-8 | 47,000 | 19-9 | 140,000 | 24-0 | 224,000 |
| 10 | 12-6 | 45,000 | 10-8 | 26,000 | 11-3 | 31,000 | 13-1 | 51,000 | 20-2 | 145,000 | 23-9 | 222,000 |
| 11 | 12-3 | 42,000 | 11-1 | 29,000 | 11-3 | 31,000 | 13-4 | 54,000 | 20-4 | 148,000 | 23-9 | 222,000 |
| 12 | 12-1 | 39,000 | 11-1 | 29,000 | 11-3 | 31,000 | 13-7 | 58,000 | 21-3 | 164,000 | 24-3 | 232,000 |
| 13 | 12-2 | 40,000 | 11-2 | 30,000 | 11-3 | 31,000 | 14-0 | 62,000 | 21-9 | 176,000 | 24-4 | 234,000 |
| 14 | 12-3 | 42,000 | 11-3 | 31,000 | 11-8 | 36,000 | 14-8 | 72,000 | 22-8 | 195,000 | 24-6 | 240,000 |
| 15 | 12-1 | 39,000 | 11-4 | 32,000 | 11-8 | 36,000 | 15-4 | 79,000 | 23-3 | 206,000 | 25-1 | 253,000 |
| 16 | 11-9 | 37,000 | 11-4 | 32,000 | 11-7 | 35,000 | 15-4 | 79,000 | 23-6 | 214,000 | 25-6 | 267,000 |
| 17 | 11-9 | 37,000 | 11-4 | 32,000 | 11-9 | 37,000 | 15-8 | 84,000 | 24-0 | 224,000 | 26-2 | 283,000 |
| 18 | 11-9 | 37,000 | 11-4 | 32,000 | 12-0 | 38,000 | 16-2 | 90,000 | 24-4 | 234,000 | 26-5 | 292,000 |
| 19 | 11-9 | 37,000 | 11-3 | 31,000 | 12-0 | 38,000 | 16-9 | 99,000 | 24-5 | 237,000 | 26-9 | 303,000 |
| 20 | 11-9 | 37,000 | 11-2 | 30,000 | 12-0 | 38,000 | 17-2 | 108,000 | 24-1 | 226,000 | 27-2 | 311,000 |
| 21 | 11-5 | 33,000 | 11-2 | 30,000 | 12-1 | 39,000 | 17-1 | 101,000 | 23-6 | 214,000 | 27-0 | 306,000 |
| 22 | 11-4 | 32,000 | 11-3 | 31,000 | 12-2 | 40,000 | 17-3 | 104,000 | 23-5 | 212,000 | 26-2 | 283,000 |
| 23 | 11-4 | 32,000 | 11-3 | 31,000 | 12-2 | 40,000 | 17-3 | 104,000 | 23-7 | 216,000 | 25-5 | 264,000 |
| 24 | 11-4 | 32,000 | 11-3 | 31,000 | 12-2 | 40,000 | 17-3 | 104,000 | 24-0 | 224,000 | 25-0 | 250,000 |
| 25 | 11-2 | 30,000 | 11-3 | 31,000 | 12-1 | 39,000 | 16-8 | 98,000 | 23-9 | 222,000 | 25-0 | 250,000 |
| 26 | 10-8 | 26,000 | 11-3 | 31,000 | 11-8 | 36,000 | 16-7 | 96,000 | 24-0 | 224,000 | 24-9 | 248,000 |
| 27 | 10-9 | 27,000 | 11-4 | 32,000 | 11-5 | 33,000 | 16-8 | 98,000 | 24-2 | 229,000 | 24-5 | 237,000 |
| 28 | 10-8 | 26,000 | 11-4 | 32,000 | 11-4 | 32,000 | 17-0 | 100,000 | 24-6 | 240,000 | 24-5 | 237,000 |
| 29 | 10-6 | 24,500 | | | 11-5 | 33,000 | 17-0 | 100,000 | 24-0 | 224,000 | 24-2 | 229,000 |
| 30 | 10-5 | 24,000 | | | 11-5 | 33,000 | 17-2 | 103,000 | 23-6 | 214,000 | 24-9 | 248,000 |
| 31 | 10-6 | 24,500 | | | 11-5 | 33,000 | | | 23-6 | 214,000 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Hope for 1914
—Con.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 24.9 | 248,000 | 20.8 | 154,000 | 16.4 | 92,000 | 15.0 | 74,000 | 15.3 | 78,000 | 14.0 | 62,000 |
| 2..... | 25.0 | 250,000 | 20.5 | 150,000 | 16.0 | 87,000 | 15.1 | 75,000 | 15.5 | 80,000 | 13.9 | 60,000 |
| 3..... | 24.8 | 245,000 | 20.3 | 146,000 | 15.8 | 84,000 | 15.0 | 74,000 | 15.6 | 82,000 | 13.6 | 57,000 |
| 4..... | 25.1 | 253,000 | 20.1 | 144,000 | 15.5 | 80,000 | 15.2 | 76,000 | 15.2 | 76,000 | 13.3 | 53,000 |
| 5..... | 25.2 | 256,000 | 19.9 | 140,000 | 15.4 | 79,000 | 15.1 | 75,000 | 15.1 | 75,000 | 13.1 | 51,000 |
| 6..... | 25.0 | 250,000 | 19.7 | 137,000 | 15.4 | 79,000 | 15.2 | 76,000 | 14.9 | 73,000 | 13.1 | 51,000 |
| 7..... | 25.0 | 250,000 | 19.9 | 140,000 | 15.6 | 82,000 | 14.7 | 70,000 | 14.8 | 72,000 | 13.0 | 50,000 |
| 8..... | 24.8 | 245,000 | 19.6 | 136,000 | 15.5 | 80,000 | 14.5 | 68,000 | 14.8 | 72,000 | 12.8 | 47,000 |
| 9..... | 24.6 | 240,000 | 19.4 | 133,000 | 15.4 | 79,000 | 14.4 | 66,000 | 14.6 | 69,000 | 12.5 | 44,000 |
| 10..... | 24.5 | 237,000 | 19.1 | 129,000 | 15.3 | 78,000 | 14.2 | 64,000 | 14.5 | 68,000 | 12.3 | 42,000 |
| 11..... | 24.3 | 232,000 | 19.0 | 127,000 | 15.3 | 78,000 | 14.2 | 64,000 | 14.5 | 68,000 | 12.0 | 38,000 |
| 12..... | 24.3 | 232,000 | 18.8 | 124,000 | 15.2 | 76,000 | 14.0 | 62,000 | 14.3 | 65,000 | 11.8 | 36,000 |
| 13..... | 24.2 | 229,000 | 18.4 | 119,000 | 15.1 | 75,000 | 13.9 | 60,000 | 14.2 | 64,000 | 11.7 | 35,000 |
| 14..... | 24.4 | 234,000 | 18.2 | 116,000 | 15.0 | 74,000 | 14.0 | 62,000 | 14.0 | 62,000 | 11.6 | 34,000 |
| 15..... | 24.2 | 229,000 | 18.1 | 115,000 | 15.2 | 76,000 | 14.2 | 64,000 | 13.8 | 59,000 | 11.4 | 32,000 |
| 16..... | 24.0 | 224,000 | 18.0 | 114,000 | 14.9 | 73,000 | 14.5 | 68,000 | 13.8 | 59,000 | 11.5 | 33,000 |
| 17..... | 23.9 | 222,000 | 18.0 | 114,000 | 14.4 | 66,000 | 14.7 | 70,000 | 13.7 | 58,000 | 11.5 | 33,000 |
| 18..... | 23.6 | 214,000 | 17.9 | 112,000 | 14.7 | 70,000 | 14.7 | 70,000 | 13.6 | 57,000 | 11.3 | 31,000 |
| 19..... | 23.6 | 214,000 | 17.9 | 112,000 | 14.7 | 70,000 | 14.9 | 73,000 | 13.4 | 54,000 | 11.2 | 30,000 |
| 20..... | 23.3 | 206,000 | 17.8 | 110,000 | 14.9 | 73,000 | 14.8 | 72,000 | 13.3 | 53,000 | 11.2 | 30,000 |
| 21..... | 23.1 | 202,000 | 17.6 | 108,000 | 14.8 | 72,000 | 14.9 | 73,000 | 13.2 | 52,000 | 11.4 | 32,000 |
| 22..... | 22.9 | 198,000 | 17.5 | 107,000 | 14.7 | 70,000 | 15.0 | 74,000 | 13.3 | 53,000 | 11.6 | 34,000 |
| 23..... | 23.0 | 200,000 | 17.5 | 107,000 | 14.9 | 73,000 | 14.9 | 73,000 | 13.5 | 55,000 | 11.7 | 35,000 |
| 24..... | 22.5 | 188,000 | 17.4 | 106,000 | 15.0 | 74,000 | 14.7 | 70,000 | 14.0 | 62,000 | 11.8 | 36,000 |
| 25..... | 22.3 | 184,000 | 17.3 | 104,000 | 14.8 | 72,000 | 14.8 | 72,000 | 13.9 | 60,000 | 12.0 | 38,000 |
| 26..... | 22.2 | 182,000 | 17.2 | 103,000 | 14.8 | 72,000 | 14.9 | 73,000 | 13.9 | 60,000 | 11.9 | 37,000 |
| 27..... | 22.0 | 178,000 | 17.0 | 100,000 | 14.9 | 73,000 | 15.1 | 75,000 | 14.0 | 62,000 | 12.0 | 38,000 |
| 28..... | 21.8 | 174,000 | 17.0 | 100,000 | 15.0 | 74,000 | 15.0 | 74,000 | 13.9 | 60,000 | 12.4 | 43,000 |
| 29..... | 21.5 | 168,000 | 16.8 | 98,000 | 14.9 | 73,000 | 15.1 | 75,000 | 13.9 | 60,000 | 12.6 | 45,000 |
| 30..... | 21.1 | 160,000 | 16.8 | 98,000 | 15.2 | 76,000 | 15.2 | 76,000 | 14.0 | 62,000 | 12.5 | 44,000 |
| 31..... | 21.0 | 158,000 | 16.7 | 96,000 | ..... | ..... | 15.2 | 76,000 | ..... | ..... | 12.3 | 42,000 |

MONTHLY DISCHARGE of Fraser River at Hope, for 1914.

(Drainage area, 85,600 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | Run-Off. | |
|----------------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| January..... | 73,000 | 24,000 | 30,500 | 0.46 | 0.53 | 2,430,000 |
| February..... | 32,000 | 25,000 | 29,600 | 0.45 | 0.36 | 1,640,000 |
| March..... | 40,000 | 31,000 | 34,600 | 0.40 | 0.46 | 2,127,000 |
| April..... | 104,000 | 32,000 | 72,800 | 0.85 | 0.95 | 4,330,000 |
| May..... | 240,000 | 108,000 | 187,000 | 2.18 | 2.51 | 11,500,000 |
| June..... | 311,000 | 195,000 | 243,600 | 2.85 | 3.18 | 14,500,000 |
| July..... | 250,000 | 158,000 | 216,000 | 2.33 | 2.92 | 13,280,000 |
| August..... | 154,000 | 96,000 | 119,000 | 1.39 | 1.60 | 7,320,000 |
| September..... | 92,000 | 66,000 | 76,000 | 0.80 | 0.99 | 4,520,000 |
| October..... | 76,000 | 60,000 | 70,800 | 0.83 | 0.96 | 4,350,000 |
| November..... | 82,000 | 64,000 | 74,300 | 0.75 | 0.84 | 3,830,000 |
| December..... | 62,000 | 30,000 | 41,100 | 0.48 | 0.55 | 2,530,000 |
| The year..... | 311,000 | 24,000 | 90,500 | 1.16 | 15.85 | 72,337,000 |

Accuracy "C."

SESSIONAL PAPER No. 25e

HIXON CREEK NEAR MOUTH (1009).

Location.—About half a mile from the mouth, in section 34, township 6, range 7, west of 7th meridian.

Records Available.—November and December, 1912; January to December, 1913; January to July, 1914, station discontinued.

Drainage Area.—Not known.

Gauge.—Vertical staff gauge, readings about three times a week.

Channel.—Rock and gravel.

Discharge Measurements.—Five measurements during 1913 and 1914.

Winter Flow.—Open water conditions, no ice.

Accuracy.—C. and D.

Co-operation.—Gauge readers maintained by Westminster Power Company.

DISCHARGE MEASUREMENTS OF HIXON Creek near mouth, 1913-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Sept. 24..... | F. MacLachlan..... | 1673 | 48 | 27 | 1.2 | 3.79 | 33 |
| Oct. 18..... | do..... | 1673 | 54 | 44 | 1.6 | 4.34 | 72 |
| Oct. 31..... | do..... | 1673 | 51 | 32 | 1.2 | 3.89 | 36 |
| Nov. 5..... | do..... | 1521 | 56 | 53 | 2.3 | 4.59 | 121 |
| 1914. | | | | | | | |
| May 19..... | do..... | 1521 | 59 | 71 | 3.1 | 4.87 | 217 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Hixon Creek at mouth for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|--------------|------------|---------------|------------|---------------|------------|---------------|------------|--------------|------------|--------------|------------|
| | Gauge Height | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height | Discharge. | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 4-2 | 60 | | 50 | | 150 | 4-15 | 55 | 4-75 | 170 | 5-2 | 360 |
| 2 | 4-6 | 125 | | 40 | 4-75 | 170 | 4-15 | 55 | 4-9 | 230 | | 250 |
| 3 | | 500 | 3-9 | 39 | | 150 | 4-85 | 210 | | 170 | 4-55 | 110 |
| 4 | 6-0 | 750 | | 37 | | 100 | | 250 | 4-55 | 110 | | 90 |
| 5 | | 700 | 3-8 | 35 | 4-35 | 75 | 5-05 | 300 | | 130 | 4-2 | 60 |
| 6 | 5-7 | 600 | 3-75 | 33 | 4-3 | 70 | | 250 | | 150 | | 60 |
| 7 | 5-15 | 340 | | 33 | | 80 | 4-8 | 185 | | 170 | | 70 |
| 8 | | 300 | 3-75 | 33 | | 90 | 4-78 | 170 | 4-8 | 185 | | 80 |
| 9 | | 200 | 3-75 | 33 | | 100 | 4-8 | 185 | 4-75 | 165 | | 80 |
| 10 | | 150 | | 33 | | 100 | | 185 | | 190 | | 90 |
| 11 | | 140 | 3-75 | 33 | | 120 | 4-8 | 185 | | 220 | | 100 |
| 12 | | 130 | 3-75 | 33 | | 130 | | 400 | | 250 | 4-5 | 100 |
| 13 | | 120 | | 40 | | 140 | 5-8 | 650 | 5-0 | 270 | | 110 |
| 14 | | 110 | 4-1 | 50 | | 150 | 5-15 | 340 | 4-95 | 250 | | 120 |
| 15 | | 100 | | 50 | | 160 | 5-6 | 560 | | 220 | 4-6 | 125 |
| 16 | | 90 | 4-1 | 50 | 4-75 | 170 | 4-95 | 250 | | 180 | | 150 |
| 17 | 4-35 | 80 | | 50 | 4-70 | 150 | 4-85 | 210 | 4-7 | 150 | | 200 |
| 18 | | 85 | | 55 | 4-65 | 135 | | 200 | | 200 | 4-95 | 250 |
| 19 | 4-45 | 90 | | 60 | | 150 | | 180 | 4-9 | 230 | | 200 |
| 20 | | 70 | 4-2 | 60 | | 170 | 4-75 | 170 | | 270 | | 150 |
| 21 | 4-2 | 60 | | 120 | 4-80 | 185 | | 150 | 5-1 | 320 | | 100 |
| 22 | | 50 | 4-8 | 185 | | 180 | | 140 | | 300 | 4-40 | 85 |
| 23 | 4-0 | 44 | | 150 | 4-55 | 110 | 4-6 | 125 | | 250 | | 100 |
| 24 | 4-0 | 44 | | 120 | 4-45 | 95 | | 100 | 4-7 | 150 | | 200 |
| 25 | | 70 | 4-4 | 85 | | 80 | 4-35 | 80 | | 150 | 4-95 | 250 |
| 26 | 4-4 | 85 | | 90 | 4-15 | 55 | | 80 | | 150 | | 250 |
| 27 | 4-1 | 50 | 4-45 | 90 | 4-05 | 47 | | 80 | | 160 | | 240 |
| 28 | 4-0 | 44 | | 100 | 4-07 | 48 | 4-37 | 80 | 4-75 | 165 | | 230 |
| 29 | | 50 | | | | 60 | | 100 | 4-4 | 85 | | 220 |
| 30 | 4-2 | 60 | | | 4-3 | 70 | | 150 | | 200 | | 210 |
| 31 | | 60 | | | | 60 | | | 5-1 | 320 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Hixon Creek at mouth for 1914.

| DAY. | July. | | August. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | | |
| 2..... | | | 4-3 | 70 |
| 3..... | | | | |
| 4..... | | | | |
| 5..... | | | | |
| 6..... | | | | |
| 7..... | | | | |
| 8..... | | | | |
| 9..... | | | | |
| 10..... | | | | |
| 11..... | | | | |
| 12..... | | | | |
| 13..... | | | | |
| 14..... | | | | |
| 15..... | | | | |
| 16..... | | | | |
| 17..... | 4-65 | 140 | | |
| 18..... | | | | |
| 19..... | | | | |
| 20..... | 4-75 | 165 | | |
| 21..... | | | | |
| 22..... | 4-50 | 100 | | |
| 23..... | | | | |
| 24..... | | | | |
| 25..... | | | | |
| 26..... | | | | |
| 27..... | | | | |
| 28..... | | | | |
| 29..... | | | | |
| 30..... | | | | |
| 31..... | | | | |

MONTHLY DISCHARGE of Hixon Creek at mouth for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | Accuracy. |
|---------------|---------------------------|----------|-------|-----------|
| | Maximum. | Minimum. | Mean. | |
| January..... | 750 | 44 | 173 | D |
| February..... | 185 | 33 | 64 | C |
| March..... | 185 | 47 | 114 | C |
| April..... | 650 | 55 | 202 | C |
| May..... | 320 | 85 | 199 | C |
| June..... | 360 | 60 | 155 | D |

HIXON CREEK ABOVE BELKNAP CREEK (1064.)

Location.—About a mile above the mouth of Belknap creek, in section 36, township 6, range 7, west of 7th meridian.

Records Available.—April to September, 1914. Not maintained regularly at present.

Drainage Area.—Not known.

Gauge.—Vertical staff, nailed to tree.

Channel.—Rocks and gravel, with natural log weir as control.

6 GEORGE V, A. 1916

MONTHLY DISCHARGE of Hixon Creek above Belknap Creek, for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | |
|-------------|---------------------------|----------|-------|
| | Maximum. | Minimum. | Mean. |
| June..... | 55 | 10 | 28 |
| July..... | 50 | 8 | 23 |
| August..... | 10 | 4 | 7 |

Accuracy "D."

JONES CREEK (1010).

Location.—At outlet of Jones lake in section 28, township 3, range 27, west of the 6th meridian.

Records Available.—Continuous records have been kept by Messrs. Anderson and Warden for the Vancouver Power Company since April, 1911.

Drainage Area.—Twenty-five square miles, determined by triangulation survey by Anderson and Warden.

Gauge.—Vertical staff fastened to rock filled crib. Readings daily.

Channel.—Uniform section with deep water and good control.

Discharge Measurements.—Five meter measurements during 1911, 1912, 1913 and 1914.

Winter Flow.—Open water practically all year.

Accuracy.—A.

Co-operation.—The records of this stream are kept by Messrs. Anderson and Warden, Civil Engineers, Vancouver, for the Vancouver Power Company.

DISCHARGE MEASUREMENTS of Jones Creek at Jones Lake, 1911-12-13-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1911. | | | | | | | |
| Nov. 3..... | K. H. Smith..... | 1057 | 51 | 96 | 0.5 | 0.50 | 518 |
| 1912. | | | | | | | |
| Sept. 18..... | C. G. Cline..... | 1046 | 51 | 104 | 0.8 | 0.85 | 87 |
| 1913. | | | | | | | |
| July 24..... | K. G. Chisholm..... | 1055 | 51 | 180 | 2.3 | 2.06 | 411 |
| Sept. 11..... | K. G. Chisholm & F. Mac- Lachlan..... | 1055 | 51 | 131 | 1.3 | 1.24 | 175 |
| 1914. | | | | | | | |
| July 23..... | C. G. Cline..... | 1933 | 51 | 128 | 1.3 | 1.22 | 164 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Jones Creek at Jones lake for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|---------------------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge ² Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-60 | 60 | 0-70 | 70 | 0-80 | 85 | 0-85 | 90 | 1-10 | 140 | 1-40 | 215 |
| 2 | 0-60 | 60 | 0-70 | 70 | 0-90 | 100 | 0-80 | 85 | 1-20 | 165 | 1-50 | 240 |
| 3 | 0-60 | 60 | 0-65 | 65 | 0-90 | 100 | 0-85 | 90 | 1-60 | 270 | 1-60 | 270 |
| 4 | 0-90 | 100 | 0-65 | 65 | 0-80 | 85 | 0-90 | 100 | 1-65 | 280 | 1-60 | 270 |
| 5 | 1-75 | 310 | 0-60 | 60 | 0-75 | 75 | 1-10 | 140 | 1-45 | 230 | 1-50 | 240 |
| 6 | 2-80 | 680 | 0-60 | 60 | 0-70 | 70 | 1-10 | 140 | 1-35 | 200 | 1-40 | 215 |
| 7 | 2-60 | 600 | 0-55 | 55 | 0-70 | 70 | 1-10 | 140 | 1-30 | 190 | 1-30 | 190 |
| 8 | 2-15 | 440 | 0-55 | 55 | 0-75 | 75 | 1-10 | 140 | 1-30 | 190 | 1-20 | 165 |
| 9 | 1-85 | 340 | 0-55 | 55 | 0-70 | 70 | 1-10 | 140 | 1-35 | 200 | 1-20 | 165 |
| 10 | 1-60 | 270 | 0-55 | 55 | 0-70 | 70 | 1-10 | 140 | 1-35 | 200 | 1-15 | 150 |
| 11 | 1-45 | 230 | 0-55 | 55 | 0-70 | 70 | 1-10 | 140 | 1-40 | 215 | 1-15 | 150 |
| 12 | 1-35 | 200 | 0-55 | 55 | 0-65 | 65 | 1-05 | 130 | 1-40 | 215 | 1-20 | 165 |
| 13 | 1-25 | 180 | 0-50 | 50 | 0-70 | 70 | 1-10 | 140 | 1-40 | 215 | 1-30 | 190 |
| 14 | 1-20 | 165 | 0-50 | 50 | 1-00 | 120 | 1-20 | 165 | 1-55 | 250 | 1-40 | 215 |
| 15 | 1-15 | 150 | 0-50 | 50 | 1-10 | 140 | 1-30 | 190 | 1-65 | 280 | 1-55 | 260 |
| 16 | 1-10 | 140 | 0-50 | 50 | 1-15 | 150 | 1-40 | 215 | 1-55 | 250 | 1-70 | 295 |
| 17 | 1-05 | 130 | 0-50 | 50 | 1-25 | 180 | 1-30 | 190 | 1-50 | 240 | 1-75 | 310 |
| 18 | 1-00 | 120 | 0-50 | 50 | 1-15 | 150 | 1-25 | 180 | 1-45 | 230 | 1-75 | 310 |
| 19 | 0-95 | 110 | 0-45 | 45 | 1-10 | 140 | 1-45 | 230 | 1-40 | 215 | 1-65 | 280 |
| 20 | 0-90 | 100 | 0-45 | 45 | 1-15 | 150 | 1-65 | 280 | 1-40 | 215 | 1-60 | 270 |
| 21 | 0-90 | 100 | 0-45 | 45 | 1-15 | 150 | 1-50 | 240 | 1-40 | 215 | 1-55 | 250 |
| 22 | 0-85 | 90 | 0-55 | 55 | 1-10 | 140 | 1-40 | 215 | 1-45 | 230 | 1-50 | 240 |
| 23 | 0-85 | 90 | 0-60 | 60 | 1-10 | 140 | 1-30 | 190 | 1-50 | 240 | 1-40 | 215 |
| 24 | 0-80 | 85 | 0-65 | 65 | 1-10 | 140 | 1-25 | 180 | 1-55 | 250 | 1-30 | 190 |
| 25 | 0-80 | 85 | 0-65 | 65 | 1-10 | 140 | 1-20 | 165 | 1-55 | 250 | 1-30 | 190 |
| 26 | 0-80 | 85 | 0-65 | 65 | 1-05 | 130 | 1-15 | 150 | 1-65 | 280 | 1-30 | 190 |
| 27 | 0-80 | 85 | 0-70 | 70 | 1-00 | 120 | 1-10 | 140 | 1-60 | 270 | 1-30 | 190 |
| 28 | 0-80 | 85 | 0-65 | 65 | 0-95 | 110 | 1-10 | 140 | 1-45 | 230 | 1-30 | 190 |
| 29 | 0-80 | 85 | | | 0-90 | 100 | 1-10 | 140 | 1-35 | 200 | 1-30 | 190 |
| 30 | 0-75 | 75 | | | 0-90 | 100 | 1-05 | 130 | 1-25 | 180 | 1-45 | 230 |
| 31 | 0-70 | 70 | | | 0-85 | 90 | | | 1-25 | 180 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Jones Creek at Jones lake for 1914
—Con.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-55 | 250 | 1-00 | 120 | 0-85 | 90 | -90 | 100 | 1-30 | 190 | 1-15 | 150 |
| 2 | 1-60 | 270 | 1-00 | 120 | 0-80 | 85 | -90 | 100 | 1-70 | 295 | 1-10 | 140 |
| 3 | 1-65 | 280 | 1-05 | 130 | 0-80 | 85 | -85 | 90 | 1-90 | 325 | 1-05 | 130 |
| 4 | 1-70 | 295 | 1-10 | 140 | 0-80 | 85 | -80 | 85 | 1-75 | 310 | 1-00 | 120 |
| 5 | 1-60 | 270 | 1-10 | 140 | 0-75 | 80 | -75 | 80 | 1-65 | 280 | -95 | 110 |
| 6 | 1-55 | 250 | 1-10 | 140 | 0-70 | 70 | -70 | 70 | 1-55 | 250 | -90 | 100 |
| 7 | 1-45 | 230 | 1-10 | 140 | 0-70 | 70 | -70 | 70 | 1-45 | 230 | -85 | 90 |
| 8 | 1-45 | 230 | 1-10 | 140 | 0-85 | 90 | -70 | 70 | 1-30 | 190 | -80 | 85 |
| 9 | 1-45 | 230 | 1-05 | 130 | 0-90 | 100 | -70 | 70 | 1-40 | 215 | -80 | 85 |
| 10 | 1-45 | 230 | 1-00 | 120 | 0-90 | 100 | -70 | 70 | 1-35 | 200 | -75 | 75 |
| 11 | 1-50 | 240 | 1-00 | 120 | 1-00 | 120 | -70 | 70 | 1-80 | 325 | -75 | 75 |
| 12 | 1-50 | 240 | 1-00 | 120 | 1-00 | 120 | -70 | 70 | 1-70 | 295 | -70 | 70 |
| 13 | 1-55 | 250 | 1-05 | 130 | 0-90 | 100 | -75 | 80 | 1-60 | 270 | -70 | 70 |
| 14 | 1-55 | 250 | 1-10 | 140 | 0-90 | 100 | -75 | 80 | 1-40 | 215 | -65 | 65 |
| 15 | 1-55 | 250 | 1-10 | 140 | 1-00 | 120 | -80 | 85 | 1-30 | 190 | -65 | 65 |
| 16 | 1-50 | 240 | 1-05 | 130 | 0-95 | 110 | -75 | 80 | 1-20 | 165 | -60 | 60 |
| 17 | 1-45 | 230 | 1-00 | 120 | 0-90 | 100 | 1-05 | 130 | 1-10 | 140 | -55 | 55 |
| 18 | 1-45 | 230 | 0-95 | 110 | 1-10 | 140 | 1-15 | 150 | 1-10 | 140 | -55 | 55 |
| 19 | 1-50 | 240 | 0-95 | 110 | 1-30 | 190 | 1-20 | 165 | 1-10 | 140 | -55 | 55 |
| 20 | 1-50 | 240 | 0-95 | 110 | 1-30 | 190 | 1-20 | 165 | 1-20 | 165 | -55 | 55 |
| 21 | 1-40 | 215 | 1-00 | 120 | 1-20 | 165 | 1-10 | 140 | 1-20 | 165 | -55 | 55 |
| 22 | 1-30 | 190 | 1-00 | 120 | 1-10 | 140 | 1-00 | 120 | 1-20 | 165 | -55 | 55 |
| 23 | 1-25 | 180 | 0-95 | 110 | 1-05 | 130 | -95 | 110 | 1-20 | 165 | -50 | 50 |
| 24 | 1-20 | 165 | 0-95 | 110 | 1-00 | 120 | -90 | 100 | 1-10 | 140 | -50 | 50 |
| 25 | 1-15 | 150 | 0-90 | 100 | 0-95 | 110 | -85 | 90 | 1-20 | 165 | -50 | 50 |
| 26 | 1-10 | 140 | 0-90 | 100 | 0-95 | 110 | -80 | 85 | 1-60 | 270 | -50 | 50 |
| 27 | 1-10 | 140 | 0-90 | 100 | 1-05 | 130 | -80 | 85 | 1-45 | 230 | -50 | 50 |
| 28 | 1-05 | 130 | 0-90 | 100 | 1-05 | 130 | -75 | 80 | 1-45 | 230 | -50 | 50 |
| 29 | 1-00 | 120 | 0-90 | 100 | 1-00 | 120 | -70 | 70 | 1-40 | 215 | -50 | 50 |
| 30 | 1-00 | 120 | 0-90 | 100 | 0-95 | 110 | -85 | 90 | 1-30 | 190 | -50 | 50 |
| 31 | 1-00 | 120 | 0-85 | 90 | | | 1-15 | 130 | | | -55 | 55 |

MONTHLY DISCHARGE of Jones Creek at Jones lake for 1914.

(Drainage area, 25 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January | 680 | 60 | 173 | 6-92 | 7-98 | 10,600 | A |
| February | 70 | 45 | 57 | 2-28 | 2-37 | 3,160 | B |
| March | 180 | 65 | 109 | 4-36 | 5-03 | 6,700 | A |
| April | 280 | 85 | 158 | 6-32 | 7-05 | 9,400 | A |
| May | 280 | 140 | 223 | 8-92 | 10-28 | 13,700 | A |
| June | 310 | 150 | 221 | 8-84 | 9-86 | 13,200 | A |
| July | 295 | 120 | 213 | 8-52 | 9-82 | 13,100 | A |
| August | 140 | 90 | 119 | 4-76 | 5-49 | 7,320 | A |
| September | 190 | 70 | 114 | 4-56 | 5-09 | 6,780 | A |
| October | 165 | 70 | 96 | 3-84 | 4-43 | 5,900 | A |
| November | 325 | 140 | 215 | 8-60 | 9-60 | 12,800 | A |
| December | 150 | 50 | 73 | 2-92 | 3-37 | 4,490 | B |
| The year | 680 | 45 | 148 | 5-90 | 80-37 | 107,150 | A |

SESSIONAL PAPER No. 25e

LYNN CREEK (1046.)

Location.—Below the overflow from the North Vancouver town intake, and about 4 miles from the mouth of the creek.

Records Available.—Daily discharges since June, 1914.

Drainage Area.—Seventeen square miles. Estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Cable gauge on flume bridge.

Channel.—Boulders and solid rock.

Discharge Measurements.—Four meter measurements made during 1914.

Winter Flow.—Open water all year.

Accuracy.—C.

Co-operation.—Gauge readings are made by Mr. Kirkland, who is employed at the intake by the Waterworks Department of North Vancouver.

DISCHARGE MEASUREMENTS of Lynn Creek below intake 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|-------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| June 10..... | C. G. Cline | 1933 | 30 | 54.0 | 2.40 | 5.00 | 124 |
| " 17..... | " | 1933 | 30 | 60.0 | 2.30 | 5.12 | 135 |
| Aug. 18..... | " | 1933 | 11 | 9.4 | 0.20 | 3.45 | 2.2 |
| Oct. 21..... | H. C. Hughes..... | 1933 | 44 | 91.0 | 2.82 | 5.80 | 250 |

DAILY GAUGE HEIGHT AND DISCHARGE of Lynn Creek below Intake for 1914.

| DAY. | June. | | July. | | August. | | September. | | October. | | November. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 5-05 | 130 | 3-30 | 2 | 3-25 | 1 | 4-90 | 110 | 7-15 | 510 |
| 2 | | | 4-95 | 120 | 3-25 | 1 | 3-05 | 1 | 4-90 | 110 | 7-90 | 660 |
| 3 | | | 4-85 | 105 | 3-15 | 1 | 3-00 | 1 | 4-50 | 65 | 7-30 | 540 |
| 4 | | | 4-85 | 105 | 3-10 | 1 | 2-90 | 1 | 4-35 | 52 | 6-15 | 320 |
| 5 | | | 4-70 | 86 | 3-10 | 1 | 2-90 | 1 | 4-25 | 44 | 5-65 | 230 |
| 6 | | | 4-65 | 80 | 3-30 | 2 | 2-80 | 1 | 4-10 | 34 | 5-80 | 260 |
| 7 | | | 4-70 | 86 | 3-55 | 7 | 2-90 | 1 | 4-15 | 37 | 5-95 | 285 |
| 8 | | | 4-50 | 65 | 3-85 | 20 | 3-10 | 1 | 4-75 | 92 | 5-45 | 380 |
| 9 | | | 4-45 | 60 | 3-75 | 15 | 3-40 | 2 | 4-80 | 98 | 6-10 | 315 |
| 10 | 4-95 | 115 | 4-35 | 52 | 3-50 | 5 | 3-50 | 5 | 4-90 | 110 | 6-10 | 315 |
| 11 | 5-05 | 130 | 4-45 | 60 | 3-35 | 2 | 3-95 | 25 | 4-80 | 98 | 5-90 | 275 |
| 12 | 5-05 | 130 | 4-40 | 56 | 3-30 | 2 | 4-30 | 48 | 7-40 | 560 | 5-75 | 250 |
| 13 | 5-15 | 150 | 4-35 | 52 | 3-25 | 1 | 4-45 | 60 | 6-05 | 305 | 5-50 | 200 |
| 14 | 5-35 | 180 | 4-40 | 56 | 3-15 | 1 | 4-70 | 86 | 5-30 | 170 | 5-35 | 180 |
| 15 | 5-30 | 170 | 4-35 | 52 | 3-25 | 1 | 4-85 | 105 | 4-95 | 120 | 5-20 | 155 |
| 16 | 5-50 | 200 | 4-30 | 48 | 3-30 | 2 | 5-10 | 140 | 6-40 | 370 | 5-75 | 250 |
| 17 | 5-00 | 125 | 4-10 | 34 | 3-25 | 2 | 5-50 | 200 | 6-70 | 425 | 5-50 | 200 |
| 18 | 5-20 | 155 | 4-05 | 31 | 3-35 | 2 | 5-85 | 265 | 6-50 | 390 | 5-50 | 200 |
| 19 | 5-10 | 140 | 4-00 | 28 | 3-30 | 2 | 6-25 | 340 | 6-00 | 295 | 5-65 | 230 |
| 20 | 4-95 | 120 | 4-10 | 34 | 3-45 | 3 | 6-75 | 480 | 5-95 | 280 | 5-75 | 250 |
| 21 | 5-30 | 170 | 3-95 | 25 | 3-40 | 2 | 5-50 | 200 | 5-90 | 275 | 5-70 | 240 |
| 22 | 5-45 | 190 | 3-75 | 15 | 3-35 | 2 | 5-40 | 185 | 5-30 | 170 | 5-50 | 200 |
| 23 | 5-10 | 140 | 3-75 | 15 | 3-25 | 2 | 5-70 | 240 | 5-10 | 140 | 5-85 | 270 |
| 24 | 4-85 | 105 | 3-80 | 17 | 3-35 | 2 | 6-05 | 305 | 4-90 | 110 | 6-35 | 360 |
| 25 | 4-80 | 98 | 3-80 | 17 | 3-35 | 2 | 6-65 | 415 | 4-70 | 86 | 6-65 | 415 |
| 26 | 4-80 | 98 | 3-65 | 10 | 3-35 | 2 | 6-70 | 425 | 4-40 | 56 | 6-85 | 450 |
| 27 | 5-00 | 125 | 3-60 | 8 | 3-15 | 1 | 6-30 | 350 | 4-30 | 48 | 6-75 | 430 |
| 28 | 5-15 | 150 | 3-55 | 6 | 3-25 | 1 | 5-50 | 200 | 4-20 | 41 | 6-80 | 445 |
| 29 | 5-20 | 155 | 3-55 | 6 | 3-25 | 1 | 5-30 | 170 | 4-25 | 44 | 6-25 | 340 |
| 30 | 5-35 | 175 | 3-40 | 2 | 3-15 | 1 | 5-15 | 150 | 4-95 | 120 | 6-00 | 295 |
| 31 | | | 3-35 | 2 | 3-25 | 1 | | | 5-65 | 230 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Lynn Creek below Intake for 1914
—Con.

| DAY. | December. | |
|------|--------------|------------|
| | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. |
| 1 | 5-80 | 260 |
| 2 | 5-80 | 260 |
| 3 | 5-95 | 285 |
| 4 | 5-45 | 180 |
| 5 | 5-50 | 200 |
| 6 | 5-35 | 180 |
| 7 | 5-25 | 160 |
| 8 | 4-95 | 120 |
| 9 | 4-65 | 80 |
| 10 | 4-55 | 70 |
| 11 | | |
| 12 | 4-40 | 56 |
| 13 | 4-40 | 56 |
| 14 | 4-35 | 52 |
| 15 | 4-15 | 37 |
| 16 | 4-05 | 31 |
| 17 | 3-95 | 25 |
| 18 | 3-90 | 22 |
| 19 | 3-90 | 22 |
| 20 | 3-90 | 22 |
| 21 | 3-80 | 17 |
| 22 | 3-75 | 15 |
| 23 | 3-75 | 15 |
| 24 | 3-75 | 15 |
| 25 | 3-65 | 10 |
| 26 | 3-75 | 15 |
| 27 | 4-10 | 34 |
| 28 | 4-70 | 86 |
| 29 | 4-85 | 104 |
| 30 | 4-75 | 92 |
| 31 | 4-40 | 56 |
| | 4-30 | 48 |

MONTHLY DISCHARGE of Lynn Creek below Intake for 1914.

(Drainage area, 17 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| July | 130 | 2 | 47 | 2-8 | 3-7 | 2,900 | C |
| August | 30 | 1 | 3 | 0-2 | 0-2 | 180 | D |
| September | 430 | 1 | 145 | 8-5 | 9-5 | 8,600 | D |
| October | 560 | 34 | 164 | 9-7 | 11-2 | 10,100 | C |
| November | 660 | 155 | 315 | 18-5 | 20-6 | 18,700 | C |
| December | 285 | 10 | 85 | 5-0 | 5-8 | 5,200 | C |

MESLILOET RIVER (1011).

Location.—A short distance below canyon, 8 miles from mouth of river and in section 8, township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 31, 1912.

Drainage Area.—Estimated at 65 square miles.

Gauge.—Vertical staff; readings two or three times a week.

Channel.—Boulders and gravel; permanent control.

Discharge Measurements.—Twelve meter measurements taken during 1912, 1913, and 1914 define the rating curve for almost the entire range.

Winter Flow.—Open water conditions all winter.

Accuracy.—The value B is assigned where the gauge readings have been taken frequently enough to warrant it.

Co-operation.—Gauge readers are maintained by the Westminster Power Company.

DISCHARGE MEASUREMENTS of Mesliobet River eight miles from mouth 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1912. | | | | | | | |
| Oct. 31..... | C. G. Cline..... | 1046 | 70 | 120 | 1.6 | 2.26 | 188 ¹ |
| 1913. | | | | | | | |
| June 6..... | H. C. Hughes..... | 1673 | 80 | 232 | 2.9 | 3.25 | 662 |
| " 13..... | do | 1673 | 80 | 240 | 3.1 | 3.40 | 713 |
| " 17..... | do | 1673 | 80 | 195 | 2.4 | 2.90 | 446 |
| July 3..... | do | 1673 | 80 | 203 | 2.4 | 2.98 | 471 |
| " 29..... | do | 1673 | 75 | 146 | 1.6 | 2.28 | 230 |
| Sept. 17..... | C. G. Cline..... | 1673 | 70 | 109 | 1.2 | 1.87 | 122 |
| Oct. 9..... | F. MacLachlan..... | 1673 | 77 | 81 | 0.9 | 1.61 | 76 |
| Nov. 10..... | do | 1521 | 83 | 186 | 2.2 | 2.86 | 417 |
| " 16..... | do | 1521 | 85 | 277 | 3.5 | 3.58 | 942 |
| 1914. | | | | | | | |
| Aug. 2..... | C. G. Cline..... | 1933 | 75 | 131 | 1.2 | 2.00 | 154 |
| Nov. 11..... | H. C. Hughes..... | 1933 | 80 | 220 | 2.6 | 3.05 | 555 |

¹ Station established.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Meslioiet River eight miles from mouth, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | 400 | | 110 | 3-80 | 1,010 | 2-1 | 170 | 2-95 | 461 | 3-4 | 720 |
| 2. | 2-90 | 436 | | 100 | | 700 | 2-1 | 170 | 3-2 | 595 | 3-1 | 540 |
| 3. | 2-75 | 368 | | 95 | 2-75 | 368 | | 380 | | 490 | 2-85 | 410 |
| 4. | 6-80 | 3,320 | 1-70 | 89 | | 290 | 3-2 | 595 | 2-8 | 389 | | 360 |
| 5. | | 2,400 | | 80 | 2-30 | 222 | | 520 | | 380 | 2-45 | 265 |
| 6. | 4-60 | 1,580 | 1-60 | 72 | 2-30 | 222 | | 470 | | 375 | | 265 |
| 7. | | 1,440 | 1-60 | 72 | | 240 | | 450 | 2-75 | 368 | | 270 |
| 8. | | 1,270 | 1-60 | 72 | | 260 | 2-9 | 436 | | 388 | | 270 |
| 9. | | 1,110 | | 76 | | 280 | 2-95 | 461 | 2-85 | 413 | | 275 |
| 10. | | 950 | 1-65 | 80 | | 300 | 3-0 | 485 | 2-8 | 389 | 2-5 | 280 |
| 11. | | 790 | 1-65 | 80 | | 320 | | 400 | | 460 | | 295 |
| 12. | | 620 | | 108 | | 340 | 2-6 | 311 | | 530 | 2-6 | 311 |
| 13. | | 440 | 1-95 | 136 | | 360 | | 640 | | 600 | | 533 |
| 14. | 2-40 | 251 | | 136 | | 380 | 3-75 | 975 | 3-3 | 660 | 3-45 | 755 |
| 15. | | 260 | 1-95 | 136 | | 400 | 3-95 | 1,115 | 3-2 | 595 | 3-6 | 860 |
| 16. | | 270 | | 141 | | 420 | | 760 | 2-9 | 436 | | 730 |
| 17. | 2-50 | 280 | 2-00 | 147 | 2-90 | 436 | 2-85 | 413 | | 420 | 3-05 | 510 |
| 18. | 2-45 | 265 | | 160 | 2-80 | 389 | 3-15 | 570 | | 400 | 2-9 | 436 |
| 19. | | 235 | | 190 | | 464 | 3-7 | 940 | 2-8 | 389 | | 380 |
| 20. | 2-25 | 210 | | 220 | 3-10 | 540 | 3-15 | 570 | 3-0 | 485 | 2-65 | 329 |
| 21. | 2-20 | 195 | 2-40 | 251 | 3-05 | 510 | | 440 | 3-7 | 940 | | 285 |
| 22. | | 160 | 2-55 | 295 | 3-00 | 485 | 2-6 | 311 | | 720 | 2-40 | 251 |
| 23. | 1-95 | 136 | | 350 | | 390 | 2-55 | 295 | 3-05 | 510 | 2-40 | 251 |
| 24. | 1-90 | 125 | 2-85 | 413 | 2-55 | 295 | | 285 | | 650 | 2-40 | 251 |
| 25. | | 155 | | 300 | 2-40 | 251 | | 275 | 3-5 | 790 | 3-05 | 510 |
| 26. | 2-20 | 195 | 2-20 | 195 | 2-25 | 210 | | 265 | 4-0 | 1,150 | 2-55 | 295 |
| 27. | | 155 | | 210 | | 190 | | 255 | 3-3 | 660 | | 295 |
| 28. | 1-85 | 116 | 2-30 | 222 | 2-10 | 170 | | 245 | 2-8 | 389 | | 295 |
| 29. | | 121 | | | 2-50 | 280 | 2-35 | 236 | 2-5 | 280 | | 290 |
| 30. | | 128 | | | 2-30 | 222 | | 350 | | 360 | | 285 |
| 31. | 1-95 | 136 | | | | 200 | | | 2-9 | 436 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Mesliloet River eight miles from mouth, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-50 | 280 | | 145 | | 50 | | 260 | | 1,600 | 2-75 | 370 |
| 2 | | 280 | 2-00 | 147 | 1-46 | 50 | | 257 | | 1,400 | | 300 |
| 3 | | 280 | | 145 | | 60 | 2-40 | 250 | | 1,300 | | 250 |
| 4 | | 280 | | 145 | | 75 | | 210 | 4-00 | 1,150 | 2-35 | 235 |
| 5 | | 280 | | 140 | | 85 | | 190 | | 900 | | 200 |
| 6 | 2-50 | 280 | | 140 | | 100 | | 170 | | 600 | | 170 |
| 7 | | 280 | | 135 | | 115 | | 150 | 2-70 | 347 | 2-00 | 145 |
| 8 | | 280 | | 130 | | 125 | | 135 | | 380 | | 140 |
| 9 | | 285 | | 125 | | 135 | 1-85 | 115 | | 430 | | 130 |
| 10 | | 285 | | 125 | 2-00 | 145 | | 150 | 3-00 | 485 | | 120 |
| 11 | | 290 | 1-90 | 125 | 1-75 | 95 | | 200 | | 430 | | 110 |
| 12 | | 290 | | 125 | | 100 | | 400 | | 350 | 1-80 | 105 |
| 13 | | 295 | | 120 | | 200 | | 600 | | 290 | | 100 |
| 14 | 2-55 | 295 | | 115 | | 300 | | 800 | 2-35 | 235 | 1-70 | 90 |
| 15 | 2-50 | 280 | 1-85 | 115 | | 1,000 | | 1,000 | | 210 | | 90 |
| 16 | | 260 | | 100 | | 1,200 | | 1,300 | | 190 | | 80 |
| 17 | | 240 | 1-65 | 80 | 4-50 | 1,510 | 4-30 | 1,370 | 2-10 | 170 | | 70 |
| 18 | | 220 | | 80 | 5-00 | 1,880 | | 1,300 | | 220 | 1-60 | 70 |
| 19 | | 195 | | 80 | | 1,300 | | 1,200 | 2-50 | 280 | | 70 |
| 20 | | 170 | | 75 | 3-40 | 720 | 4-00 | 1,150 | | 450 | | 65 |
| 21 | 1-95 | 136 | | 75 | | 700 | | 1,000 | | 600 | 1-55 | 65 |
| 22 | 1-95 | 136 | | 70 | | 600 | | 850 | | 750 | | 60 |
| 23 | | 145 | | 70 | | 500 | 3-40 | 720 | 3-65 | 900 | 1-50 | 60 |
| 24 | | 155 | | 65 | | 400 | | 600 | | 1,100 | | 60 |
| 25 | | 165 | | 65 | | 350 | | 460 | 4-40 | 1,440 | | 65 |
| 26 | | 175 | | 65 | | 350 | | 330 | | 1,200 | | 65 |
| 27 | | 185 | | 60 | | 350 | 2-20 | 195 | | 1,000 | 1-55 | 65 |
| 28 | 2-20 | 195 | | 60 | 2-65 | 330 | | 300 | 3-55 | 820 | | 80 |
| 29 | 1-95 | 136 | | 55 | | 300 | | 1,000 | | 800 | | 90 |
| 30 | | 140 | | 55 | | 280 | | 1,500 | | 700 | | 100 |
| 31 | | 145 | | 50 | | | 4-90 | 1,800 | | | 1-90 | 125 |

MONTHLY DISCHARGE of Mesliloet River eight miles from mouth, for 1914.

(Drainage area, 65 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| January | 3,320 | 116 | 597 | 9-2 | 10-6 | 36,700 | B |
| February | 413 | 72 | 162 | 2-5 | 2-6 | 9,000 | B |
| March | 1,010 | 170 | 360 | 5-5 | 6-3 | 22,100 | B |
| April | 1,115 | 170 | 460 | 7-1 | 7-9 | 27,400 | B |
| May | 1,150 | 280 | 520 | 8-0 | 9-2 | 32,000 | B |
| June | 755 | 251 | 393 | 6-0 | 6-7 | 23,400 | B |
| July | 295 | 136 | 228 | 3-5 | 4-0 | 14,000 | C |
| August | 147 | 50 | 99 | 1-5 | 1-7 | 6,100 | C |
| September | 1,880 | 50 | 447 | 6-9 | 7-7 | 26,600 | C |
| October | 1,800 | 115 | 644 | 9-9 | 11-4 | 39,600 | C |
| November | 1,690 | 170 | 691 | 10-6 | 11-8 | 41,100 | C |
| December | 370 | 60 | 121 | 1-9 | 2-2 | 7,400 | C |
| The year | 1,880 | 50 | 394 | 6-05 | 82-1 | 285,400 | C |

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NICOLUM RIVER (1058).

Location.—At the pack trail bridge, 4 miles from the mouth of the river and 9 miles from Hope; in section 27, township 4, range 5, west of 6th meridian

Records Available.—August to December, 1914—irregular.

Drainage Area.—Thirty square miles (above gauging station.)

Gauge.—Vertical staff. Readings irregular.

Channel.—Rocky; water swift at high stages.

Discharge Measurements.—Four during 1914; one of them was under ice conditions.

Winter Flow.—Stream remains open all winter but during cold spells anchor ice disturbs somewhat the ordinary relation between gauge height and discharge.

NICOLUM RIVER.

The Nicolum river has its source in the Nicolum lakes at an elevation of something like twenty-one hundred feet. It discharges into the Coquihalla river near Hope, about 4 miles from the Fraser river at an elevation of some three hundred feet. The stream has a drainage area of 30 square miles above the gauging section.

For the greater part of the year there is no direct surface flow from the lakes into the river, but the flow is kept up by seepage, which comes out as springs in the bed of the stream, some little distance below the lakes. It is only for a short period during the spring freshet that the lakes overflow directly into the stream. This condition of affairs gives a very uniform flow, which, however, is affected to some extent by two tributaries which enter from either side of the stream a few miles below the lake.

The precipitation in the Nicolum river watershed probably averages something over seventy inches. In the winter there is very little snow near the mouth of the creek, but at the headwaters there is a considerable depth. The stream does not generally freeze at the gauging station but the water is sometimes backed up a little by ice.

The pack trail from Hope to Princeton follows the Nicolum river from its mouth to the lakes. Part of this road was widened at one time for the use of wagons, and it would be a simple matter to convert it into a wagon road at least as far as the Nicolum lakes. Lately, however, it has been used merely as a pack trail.

There is practically no settlement or development in the Nicolum valley. The country is mostly mountainous, and there is very little good farming land, with the exception of a fringe around the lakes.

The Nicolum lakes are located at one end of a valley which lies among the hills at an altitude of some twenty-one hundred feet. The Nicolum river drains one end of this valley. The Sumallo river flows down from the hills near the other end of the valley on its way to join the Skagit below. The natural conditions are such that it would be quite possible to divert the Sumallo river into the Nicolum lakes. This would give a fairly good flow of water at quite a high head. By utilizing the total fall to the Fraser river, a head of something like two thousand feet could be obtained, though this would require a pipe line about 10 miles long. The lakes would give good storage, particularly since their area could be greatly increased by means of storage dams. The natural seepage which takes place from the lakes at present would be a considerable disadvantage. However, test pits which have been sunk, seem to indicate that there is only one of the lakes that supplies this seepage and that the glacial silt in the rest of the valley bottom would prevent any such losses, provided that the one troublesome lake was omitted from the storage system.

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The flow available for such a development is given by the flow of the Sumallo river as measured at the station eight miles from the mouth. To this must be added a portion of the flow as measured at the station on the Nicolum, which cannot all be utilized because it includes the water brought down by the two tributaries which enter below the lake, and it would only be possible to divert one of these streams into the proposed pipeline. The measurements at the upper station on the Sumallo, however, are not as complete as those which have been taken at the station near the mouth, since it was not possible to get regular gauge readings. In using the flow of the Sumallo river at the lower station, a considerable reduction should be made. This amount can be determined by comparing the discharges at the two stations, at various times of the year. It is expected that next year more complete data on these streams will be available.

DISCHARGE MEASUREMENTS of Nicolum River at Nine-mile Bridge, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|-------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| July 17..... | C. G. Cline..... | 1933 | 26 | 27.0 | 2.80 | 1.55 | 74.3 |
| Aug. 27..... | do | 1933 | 26 | 16.4 | 1.50 | 1.10 | 24.0 |
| Oct. 29..... | H. C. Hughes..... | 1933 | 28 | 15.7 | 1.60 | 1.10 | 24.0 |
| Dec. 17..... | do | 1521 | 28 | 16.5 | 1.87 | 1.35 | 30.8 ¹ |

¹ Ice conditions.

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DAILY GAUGE HEIGHT AND DISCHARGE of Nicolom River four miles from mouth for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | 45 | | | | 35 | | | | |
| 2 | | | 1-30 | 45 | | | 1-20 | 35 | | | | |
| 3 | | | | 45 | | | | 35 | | | | |
| 4 | | | 1-30 | 45 | | | 1-20 | 35 | | | 1-60 | 85 |
| 5 | | | | | | | | 35 | | | | |
| 6 | | | | | | | | | | | 1-50 | 70 |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | 1-20 | 35 | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | 1-25 | 40 | | | | | | | 1-40 | 57 |
| 13 | | | | 35 | | | | | | | | |
| 14 | | | 1-20 | 35 | | | | | | | | |
| 15 | | | | | 1-30 | 45 | | | | | 1-25 | 40 |
| 16 | | | | | 1-20 | 35 | | | | | | |
| 17 | 1-55 | 77 | 1-20 | 35 | | | | | | | Ice. | 33 |
| 18 | | | 1-20 | 35 | | | | | 1-45 | 64 | | |
| 19 | | | 1-10 | 25 | | | | | 1-50 | 70 | | |
| 20 | | | | 25 | | | 1-20 | 35 | 1-60 | 85 | | |
| 21 | | | | | | | 1-20 | 35 | 1-60 | 85 | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | 1-70 | 100 | | |
| 25 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 27 | | | 1-10 | 25 | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 29 | | | 1-10 | 25 | 1-20 | 35 | 1-10 | 25 | | | | |
| 30 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |

NORTON CREEK (1013.)

Location.—An outlet of Norton lake in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 20, 1912, except for part of January, 1914.

Drainage Area.—Not known—very small.

Gauge.—Vertical staff. Very few readings during the winter of 1914.

Channel.—Boulders.

Discharge Measurements.—Twelve meter measurements made during 1912, 1913, and 1914, define the rating curve accurately except for highest freshets.

Winter Flow.—The lake freezes over, but the stream remains free of ice at the gauge.

Accuracy.—C. and D. Gauge readings irregular for part of the year.

Co-operation.—The gauge readers are maintained by the Westminster Power Company.

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DISCHARGE MEASUREMENTS of Norton Creek at Norton Lake, 1912-13-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Height. | Gauge Velocity. | Discharge. |
|----------|---------------|-----------|--------|------------------|--------------|-----------------|-------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1912. | | | | | | | |
| Oct. 20 | C. G. Cline | 1046 | 9.0 | 11.8 | 0.6 | 2.53 | 7.6 ¹ |
| 1913. | | | | | | | |
| June 3 | H. C. Hughes | 1673 | 16.0 | 16.0 | 1.0 | 2.85 | 16.3 ² |
| June 10 | do | 1673 | 8.5 | 9.3 | 1.0 | 2.60 | 9.3 |
| June 24 | do | 1673 | 8.0 | 7.5 | 0.8 | 2.52 | 5.7 |
| July 7 | do | 1673 | 10.0 | 13.3 | 0.6 | 2.53 | 7.7 |
| July 23 | do | 1673 | 6.0 | 6.4 | 0.3 | 2.11 | 1.8 |
| Aug. 2 | do | 1673 | 6.0 | 5.1 | 0.1 | 1.85 | 0.5 |
| Sept. 23 | F. MacLachlan | 1673 | 3.5 | 1.9 | 0.9 | 2.06 | 1.8 |
| 1914. | | | | | | | |
| May 17 | F. MacLachlan | 1521 | 10.0 | 4.0 | 1.6 | 2.43 | 6.2 |
| May 17 | do | 1521 | 9.5 | 11.8 | 0.6 | 2.43 | 6.6 |
| July 31 | C. G. Cline | 1933 | 3.0 | 1.0 | 0.5 | 1.80 | 0.8 |
| Nov. 14 | H. C. Hughes | 1933 | 10.0 | 12.8 | 0.8 | 2.65 | 10.3 |

¹Station established.²Several different sections used.³Different section for a check.

DAILY GAUGE HEIGHT AND DISCHARGE of Norton Creek at Norton Lake for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|------------|---------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Discharge. | Gauge Height. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | 3 | 3.1 | 27 | | 6 | | 11.0 | | 5.2 |
| 2 | | | 2.2 | 2.7 | | 22 | | 9 | | 10.0 | | 5.2 |
| 3 | | | | 2.8 | | 17 | | 11 | | 9.5 | | 5.2 |
| 4 | | | | 2.9 | 2.8 | 14 | | 13 | | 9.0 | 2.4 | 5.2 |
| 5 | 3.50 | 46 | | 3 | 2.7 | 11 | | 15 | 2.6 | 8.6 | | 4.5 |
| 6 | | | | 3 | | 11 | 2.9 | 18 | 2.55 | 7.7 | 2.3 | 3.7 |
| 7 | | | | 3 | | 11 | | 18 | | 7.5 | | 3.7 |
| 8 | | | | 3 | | 12 | | 18 | | 7.2 | | 3.7 |
| 9 | | | | 3 | | 12 | | 18 | | 6.8 | | 3.7 |
| 10 | | | | 3 | | 13 | | 18 | | 6.4 | | 3.7 |
| 11 | | | | 3 | | 13 | | 18 | | 6.0 | 2.3 | 3.7 |
| 12 | | | | 3 | | 14 | | 18 | | 5.9 | | 3.5 |
| 13 | | | | 3 | | 14 | | 18 | | 5.8 | | 3.3 |
| 14 | | | | 3 | | 15 | | 18 | | 5.7 | | 3.1 |
| 15 | | | | 3 | | 15 | | 18 | | 5.6 | | 2.9 |
| 16 | | | | 3 | | 16 | | 18 | | 5.5 | 2.2 | 2.7 |
| 17 | | | | 3 | | 17 | | 18 | | 5.3 | 2.2 | 2.7 |
| 18 | | | 2.25 | 3.2 | | 17 | | 18 | 2.4 | 5.2 | | 2.5 |
| 19 | | | 2.25 | 3.2 | 2.9 | 18 | | 18 | | 5.0 | 2.15 | 2.3 |
| 20 | | | | 3.5 | | 17 | | 18 | | 4.8 | | 2.8 |
| 21 | | | | 4 | | 16 | 2.9 | 18 | | 4.6 | | 3.3 |
| 22 | | | | 5 | | 15 | 2.8 | 14 | 2.35 | 4.5 | | 3.8 |
| 23 | | | | 6 | | 13 | | 14 | | 4.5 | | 4.1 |
| 24 | | | | 7 | | 11 | | 14 | | 4.6 | | 4.5 |
| 25 | | | | 8 | | 10 | | 14 | | 4.7 | | 4.9 |
| 26 | | | | 9 | | 9 | | 14 | | 4.8 | 2.40 | 5.2 |
| 27 | | | | 10 | | 8 | | 14 | | 4.9 | 2.30 | 3.7 |
| 28 | | | 2.7 | 11 | | 7 | | 14 | | 5.0 | 2.30 | 3.7 |
| 29 | | | | | | 6 | 2.8 | 14 | | 5.1 | 2.30 | 3.7 |
| 30 | | | | | | 5 | | 12 | 2.4 | 5.2 | 2.30 | 3.7 |
| 31 | | | | | 2.3 | 3.7 | | | | 5.2 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Norton Creek at Norton lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 3.2 | 1.8 | 0.4 | 1.6 | 0.1 | | 6 | | 40 | 2.55 | 16 |
| 2 | 2.2 | 2.7 | | 0.4 | 1.6 | 0.1 | | 6 | 3.60 | 50 | 2.75 | 13 |
| 3 | | 2.4 | | 0.4 | | 0.1 | 2.45 | 6 | | 40 | 2.70 | 11 |
| 4 | | 2.1 | | 0.4 | | 0.2 | | 6 | | 30 | 2.60 | 8.6 |
| 5 | | 1.8 | | 0.4 | | 0.2 | | 5 | | 20 | 2.55 | 7.6 |
| 6 | | 1.5 | | 0.4 | | 0.3 | | 4 | | 10 | | 6 |
| 7 | 2.0 | 1.2 | | 0.5 | | 0.4 | | 4 | 2.60 | 8.6 | | 5 |
| 8 | 2.0 | 1.2 | 1.84 | 0.5 | 1.80 | 0.4 | | 3 | | 10 | 2.35 | 4.5 |
| 9 | 2.0 | 1.2 | | 0.5 | | 0.4 | | 3 | | 15 | 2.30 | 3.7 |
| 10 | 2.0 | 1.2 | 1.81 | 0.4 | | 0.5 | 2.20 | 2.7 | | 20 | 2.30 | 3.7 |
| 11 | 1.95 | 0.9 | | 0.4 | 1.85 | 0.5 | | 2.7 | 3.60 | 22 | 2.25 | 3.2 |
| 12 | | 0.9 | 1.80 | 0.4 | | 1.0 | | 2.7 | 2.90 | 18 | | 3.0 |
| 13 | 1.9 | 0.7 | | 0.4 | | 2 | | 2.7 | 2.80 | 14 | | 2.5 |
| 14 | | 0.7 | | 0.4 | | 3 | | 2.7 | 2.70 | 11 | 2.15 | 2.3 |
| 15 | | 0.7 | 1.80 | 0.4 | | 4 | 2.20 | 2.7 | | 10 | 2.15 | 2.3 |
| 16 | 1.9 | 0.7 | | 0.4 | | 5 | | 40 | 2.60 | 8.6 | 2.15 | 2.3 |
| 17 | | 0.7 | | 0.3 | | 10 | 4.20 | 80 | | 8.6 | 2.15 | 2.3 |
| 18 | 1.91 | 0.7 | 1.75 | 0.3 | 2.9 | 18 | 4.30 | 85 | 2.60 | 8.6 | 2.10 | 1.9 |
| 19 | 1.91 | 0.7 | | 0.3 | 3.3 | 36 | | 60 | | 8.6 | | 1.8 |
| 20 | 1.89 | 0.7 | | 0.2 | 3.25 | 34 | | 40 | | 8.6 | | 1.6 |
| 21 | | 0.7 | | 0.2 | | 30 | | 20 | 2.6 | 8.6 | 2.05 | 1.5 |
| 22 | | 0.7 | 1.70 | 0.2 | | 20 | 2.80 | 14 | | 15 | 2.05 | 1.5 |
| 23 | 1.89 | 0.7 | | 0.2 | | 16 | | 10 | 2.90 | 18 | 2.05 | 1.5 |
| 24 | | 0.7 | 1.70 | 0.2 | | 14 | 2.30 | 6.7 | | 20 | | 1.5 |
| 25 | 1.90 | 0.7 | 1.70 | 0.2 | | 12 | | 6 | | 20 | | 1.6 |
| 26 | 1.94 | 0.9 | | 0.2 | | 10 | | 5 | 3.00 | 22 | | 1.7 |
| 27 | | 0.8 | | 0.1 | | 8 | | 4 | 3.0 | 22 | | 1.8 |
| 28 | | 0.6 | 1.62 | 0.1 | 2.55 | 7.5 | 2.30 | 3.7 | 3.25 | 34 | 2.10 | 1.9 |
| 29 | | 0.5 | | 0.1 | | 7 | | 5 | | 30 | 2.10 | 1.9 |
| 30 | 1.8 | 0.4 | 1.62 | 0.1 | | 7 | | 10 | | 20 | 2.15 | 2.3 |
| 31 | 1.8 | 0.4 | 1.60 | 0.1 | | | | 20 | | | 2.30 | 3.7 |

MONTHLY DISCHARGE of Norton Creek at Norton Lake, for 1914

| MONTH. | DISCHARGE IN SECOND-FEET. | | | Accuracy |
|-----------|---------------------------|----------|-------|----------|
| | Maximum. | Minimum. | Mean. | |
| | | | | |
| February | | | 4.3 | D |
| March | | | 13.2 | D |
| April | | | 15.5 | D |
| May | | | 61.6 | D |
| June | | | 3.7 | C |
| July | 5.2 | 2.3 | 1.1 | C |
| August | 3.2 | 0.4 | 0.3 | C |
| September | 0.5 | 0.1 | 0.3 | C |
| October | 36 | 0.1 | 8.2 | D |
| November | 85 | 2.7 | 15.1 | D |
| December | 50 | 8.6 | 19.4 | C |
| | 16 | 1.5 | 4.0 | C |

SEYMOUR CREEK (1022).

Location.—Above the Vancouver waterworks intake and about seven miles from the mouth of the creek.

Records available.—Daily discharges since November, 1913.

Drainage Area.—Above intake, 76 square miles, estimated by the engineers of the Provincial Water Rights Branch.

Gauge.—Vertical staff gauge spiked to cribbing at intake.

Channel.—Rocks and boulders; water swift at high stages.

Discharge Measurements.—Seven meter measurements during 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—B.

Co-operation.—Gauge readings are made by employees of the Vancouver Waterworks Department.

DISCHARGE MEASUREMENTS of Seymour Creek above city intake, 1913-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-----------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Nov. 6..... | H. J. E. Keys..... | | 67 | 133 | | 1.60 | 282 ¹ |
| 1914. | | | | | | | |
| Jan. 6..... | Keys & McLachlan..... | 1046 | 155 | 662 | 6.7 | 4.20 | 4,450 |
| April 30..... | Keys & Webb..... | 1057 | 155 | 368 | 2.1 | 2.35 | 775 |
| May 29..... | C. G. Cline..... | 1521 | 100 | 281 | 1.6 | 1.91 | 430 |
| Aug. 14..... | do..... | 1933 | 115 | 157 | 0.47 | 0.60 | 73 ² |
| Oct. 15..... | C. E. Webb..... | 1057 | 139 | 355 | 1.9 | 2.00 | 600 |
| Oct. 20..... | H. C. Hughes..... | 1933 | 160 | 588 | 3.9 | 3.20 | 2,290 |

¹Station established.

²Backwater from small dam.

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DAILY GAUGE HEIGHT AND DISCHARGE of Seymour Creek at Upper Intake, 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1.95 | 490 | 1.55 | 265 | 3.20 | 2,140 | 1.70 | 330 | 2.47 | 970 | 2.50 | 1,000 |
| 2..... | 2.35 | 850 | 1.45 | 225 | 2.45 | 950 | 1.60 | 285 | 2.75 | 1,325 | 2.55 | 1,060 |
| 3..... | 2.65 | 1,185 | 1.30 | 175 | 2.40 | 900 | 2.10 | 620 | 2.55 | 1,060 | 2.45 | 950 |
| 4..... | 6.10 | 9,210 | 1.23 | 158 | 2.17 | 682 | 2.50 | 1,000 | 2.25 | 755 | 2.12 | 640 |
| 5..... | 3.55 | 2,810 | 1.17 | 144 | 1.90 | 450 | 3.10 | 1,920 | 2.15 | 665 | 1.90 | 450 |
| 6..... | 5.00 | 6,460 | 1.09 | 128 | 1.70 | 330 | 2.52 | 1,025 | 2.20 | 710 | 1.75 | 415 |
| 7..... | 3.05 | 1,825 | 1.03 | 116 | 1.65 | 307 | 2.42 | 925 | 2.40 | 900 | 1.80 | 380 |
| 8..... | 2.70 | 1,250 | 1.00 | 110 | 1.77 | 365 | 2.35 | 850 | 2.30 | 800 | 2.05 | 575 |
| 9..... | 2.30 | 800 | 1.00 | 110 | 1.87 | 430 | 2.30 | 800 | 2.20 | 710 | 2.00 | 530 |
| 10..... | 2.12 | 638 | 1.02 | 114 | 1.70 | 330 | 2.45 | 950 | 2.10 | 620 | 1.95 | 490 |
| 11..... | 2.20 | 710 | 1.10 | 130 | 1.60 | 285 | 2.40 | 900 | 2.25 | 755 | 2.00 | 530 |
| 12..... | 2.00 | 530 | 1.30 | 175 | 1.55 | 265 | 2.20 | 710 | 2.30 | 800 | 2.20 | 710 |
| 13..... | 2.10 | 620 | 1.50 | 245 | 2.57 | 1,090 | 2.92 | 1,595 | 2.50 | 1,000 | 2.20 | 710 |
| 14..... | 2.00 | 530 | 1.50 | 245 | 3.72 | 3,300 | 3.40 | 2,580 | 2.70 | 1,250 | 2.35 | 850 |
| 15..... | 1.85 | 415 | 1.52 | 253 | 2.55 | 1,060 | 3.45 | 2,690 | 2.60 | 1,120 | 2.60 | 1,120 |
| 16..... | 2.55 | 1,060 | 1.50 | 245 | 2.42 | 925 | 2.70 | 1,250 | 2.40 | 800 | 2.32 | 1,145 |
| 17..... | 2.17 | 683 | 1.50 | 245 | 2.45 | 950 | 2.40 | 900 | 2.30 | 800 | 2.47 | 970 |
| 18..... | 2.05 | 575 | 1.45 | 225 | 2.45 | 950 | 2.25 | 755 | 2.20 | 710 | 2.30 | 800 |
| 19..... | 1.95 | 490 | 1.45 | 225 | 2.45 | 950 | 2.80 | 1,400 | 2.35 | 850 | 2.15 | 665 |
| 20..... | 1.77 | 365 | 1.45 | 225 | 2.60 | 1,120 | 2.60 | 1,120 | 2.50 | 1,000 | 2.00 | 530 |
| 21..... | 1.65 | 307 | 1.85 | 415 | 2.50 | 1,000 | 2.30 | 800 | 2.60 | 1,120 | 2.00 | 530 |
| 22..... | 1.52 | 253 | 2.27 | 773 | 2.45 | 950 | 2.20 | 710 | 2.65 | 1,185 | 2.05 | 575 |
| 23..... | 1.45 | 225 | 2.25 | 755 | 2.25 | 755 | 2.10 | 620 | 2.50 | 1,000 | 1.95 | 490 |
| 24..... | 1.32 | 181 | 2.50 | 1,000 | 2.10 | 620 | 2.00 | 530 | 2.55 | 1,060 | 2.00 | 530 |
| 25..... | 1.27 | 168 | 2.07 | 593 | 1.90 | 450 | 1.90 | 450 | 2.60 | 1,120 | 2.50 | 1,000 |
| 26..... | 1.95 | 490 | 1.92 | 466 | 1.70 | 330 | 1.85 | 415 | 2.75 | 1,325 | 2.25 | 755 |
| 27..... | 1.65 | 307 | 2.07 | 593 | 1.60 | 285 | 1.95 | 490 | 2.77 | 1,355 | 2.10 | 630 |
| 28..... | 1.45 | 225 | 2.10 | 620 | 1.50 | 245 | 1.90 | 450 | 2.20 | 710 | 2.05 | 575 |
| 29..... | 1.45 | 225 | ..... | ..... | 1.80 | 380 | 1.80 | 380 | 1.95 | 490 | 2.10 | 620 |
| 30..... | 1.75 | 355 | ..... | ..... | 1.80 | 380 | 2.00 | 530 | 2.10 | 620 | 2.20 | 710 |
| 31..... | 1.45 | 225 | ..... | ..... | 1.70 | 330 | ..... | ..... | 2.30 | 800 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Seymour Creek above Upper Intake, for 1914.—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|--------------|------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height | Dis-charge | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2-20 | 710 | 0-90 | 95 | 0-35 | 50 | 1-85 | 410 | 4-70 | 5,700 | 2-25 | 750 |
| 2..... | 2-20 | 710 | 0-90 | 95 | 0-30 | 50 | 2-25 | 750 | 4-10 | 4,200 | 2-10 | 620 |
| 3..... | 2-20 | 710 | 0-85 | 85 | 0-30 | 50 | 1-92 | 465 | 2-87 | 1,500 | 1-90 | 450 |
| 4..... | 2-10 | 620 | 0-85 | 85 | 0-30 | 50 | 1-70 | 330 | 4-20 | 4,450 | 1-80 | 380 |
| 5..... | 2-00 | 530 | 0-80 | 80 | 0-30 | 50 | 1-55 | 265 | 2-55 | 1,060 | 1-70 | 330 |
| 6..... | 1-95 | 490 | 0-80 | 80 | 0-35 | 50 | 1-40 | 205 | 2-25 | 750 | 1-55 | 265 |
| 7..... | 1-85 | 415 | 1-00 | 110 | 0-35 | 50 | 1-30 | 175 | 2-20 | 710 | 1-45 | 225 |
| 8..... | 1-85 | 415 | 1-10 | 130 | 0-85 | 85 | 1-25 | 160 | 3-95 | 3,840 | 1-40 | 205 |
| 9..... | 1-80 | 380 | 0-90 | 95 | 1-10 | 130 | 1-20 | 150 | 3-05 | 1,820 | 1-30 | 175 |
| 10..... | 1-80 | 380 | 0-85 | 85 | 1-10 | 130 | 1-20 | 150 | 2-92 | 1,600 | 1-25 | 160 |
| 11..... | 1-80 | 380 | 0-80 | 80 | 1-15 | 145 | 1-30 | 175 | 2-65 | 1,180 | 1-15 | 140 |
| 12..... | 1-75 | 355 | 0-80 | 80 | 1-05 | 120 | 3-15 | 2,030 | 2-30 | 800 | 1-10 | 130 |
| 13..... | 1-70 | 330 | 0-70 | 70 | 0-95 | 100 | 3-60 | 3,020 | 2-15 | 660 | 1-05 | 120 |
| 14..... | 1-75 | 355 | 0-62 | 65 | 1-02 | 115 | 2-45 | 950 | 1-95 | 490 | 1-00 | 110 |
| 15..... | 1-65 | 305 | 0-37 | 65 | 1-45 | 225 | 2-00 | 530 | 1-60 | 285 | 1-00 | 110 |
| 16..... | 1-60 | 285 | 0-55 | 60 | 1-47 | 235 | 4-20 | 4,460 | 1-50 | 245 | 1-00 | 110 |
| 17..... | 1-50 | 245 | 0-50 | 60 | 2-02 | 550 | 4-05 | 4,080 | 1-40 | 205 | 1-00 | 110 |
| 18..... | 1-60 | 285 | 0-50 | 60 | 3-50 | 2,800 | 4-70 | 5,710 | 1-77 | 365 | 1-00 | 110 |
| 19..... | 1-55 | 265 | 0-40 | 55 | 4-30 | 4,770 | 4-35 | 4,840 | 2-10 | 620 | 0-95 | 100 |
| 20..... | 1-50 | 245 | 0-40 | 55 | 2-87 | 1,515 | 3-05 | 1,820 | 2-35 | 850 | 0-90 | 95 |
| 21..... | 1-20 | 150 | 0-40 | 55 | 2-20 | 710 | 2-70 | 1,250 | 2-15 | 660 | 0-80 | 80 |
| 22..... | 1-10 | 130 | 0-40 | 55 | 1-85 | 415 | 2-27 | 775 | 2-50 | 1,000 | 0-80 | 80 |
| 23..... | 1-20 | 150 | 0-40 | 55 | 1-57 | 275 | 1-95 | 490 | 3-45 | 2,700 | 0-80 | 80 |
| 24..... | 1-20 | 150 | 0-45 | 60 | 1-40 | 205 | 1-80 | 380 | 3-10 | 1,920 | 0-80 | 80 |
| 25..... | 1-10 | 130 | 0-45 | 60 | 1-30 | 175 | 1-70 | 330 | 3-30 | 2,360 | 0-85 | 85 |
| 26..... | 1-15 | 140 | 0-42 | 55 | 1-52 | 255 | 1-60 | 285 | 2-80 | 1,400 | 0-85 | 85 |
| 27..... | 1-05 | 120 | 0-42 | 55 | 2-50 | 1,000 | 1-50 | 245 | 3-10 | 1,920 | 0-85 | 85 |
| 28..... | 1-00 | 110 | 0-40 | 55 | 2-30 | 800 | 1-40 | 205 | 2-72 | 1,300 | 1-00 | 110 |
| 29..... | 0-95 | 100 | 0-40 | 55 | 2-00 | 530 | 1-30 | 175 | 2-40 | 900 | 1-00 | 110 |
| 30..... | 0-95 | 100 | 0-42 | 55 | 1-90 | 450 | 2-35 | 850 | 2-20 | 710 | 1-05 | 120 |
| 31..... | 0-90 | 95 | 0-40 | 55 | ..... | ..... | 3-20 | 2,140 | ..... | ..... | 1-05 | 120 |

MONTHLY DISCHARGE of Seymour Creek, Upper Station, for 1914.

(Drainage area, 76 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 9,210 | 168 | 1,115 | 14-68 | 16-92 | 68,500 | B |
| February..... | 1,000 | 110 | 320 | 4-22 | 4-39 | 17,800 | B |
| March..... | 3,300 | 245 | 758 | 10-00 | 11-53 | 46,600 | B |
| April..... | 2,690 | 285 | 933 | 12-30 | 13-72 | 55,500 | B |
| May..... | 1,355 | 490 | 919 | 12-10 | 13-95 | 56,500 | B |
| June..... | 1,145 | 380 | 697 | 9-17 | 10-23 | 41,300 | B |
| July..... | 710 | 95 | 315 | 4-14 | 4-77 | 19,400 | B |
| August..... | 130 | 55 | 71 | 0-94 | 1-09 | 4,400 | C |
| September..... | 4,710 | 50 | 534 | 7-03 | 7-84 | 31,800 | B |
| October..... | 5,710 | 150 | 1,220 | 16-10 | 18-56 | 75,000 | B |
| November..... | 5,700 | 205 | 1,540 | 20-30 | 22-65 | 91,600 | B |
| December..... | 750 | 80 | 185 | 2-44 | 2-81 | 11,400 | B |
| The year..... | 9,210 | 50 | 717 | 9-45 | 128-46 | 520,000 | B |

SESSIONAL PAPER No. 25e

SILVER-PITT CREEK (1017).

Location.—At lower end of canyon about 2 miles from mouth of creek in section 8, township 4, range 5, west of the 7th meridian.

Records Available.—Continuous since August, 1912.

Drainage Area.—Seventy square miles above gauging station.

Gauge.—Vertical staff gauge readings three times a week.

Channel.—Rocky; uneven bottom but permanent control. Deep still pool just above gauging section.

Discharge Measurements.—Eight meter measurements during 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—C. Gauge readings only three times a week.

DISCHARGE MEASUREMENTS of Silver-Pitt Creek at mouth of Canyon, 1912-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| 1912. | | | | | | | |
| Aug. 9..... | C. G. Cline..... | 1046 | 65 | 104 | 2.39 | 1.50 | 242 |
| 1913. | | | | | | | |
| May 25..... | C. G. Cline..... | 1044 | 60 | 121 | 3.05 | 2.15 | 369 |
| July 16..... | K. G. Chisholm..... | 1055 | 62 | 100 | 1.83 | 1.41 | 190 |
| Sept. 16..... | do..... | 1055 | 57 | 68 | 1.35 | 0.87 | 92 |
| Sept. 17..... | do..... | 1055 | 55 | 66 | 1.27 | 0.90 | 84 |
| Oct. 25..... | H. J. E. Keys..... | 1057 | 61 | 73 | 1.60 | 0.99 | 116 |
| 1914. | | | | | | | |
| July 20..... | C. G. Cline..... | 1933 | 52 | 60 | 1.50 | 0.90 | 90 |
| Nov. 5..... | H. C. Hughes..... | 1933 | 72 | 142 | 3.00 | 2.19 | 405 |

DAILY GAUGE HEIGHT AND DISCHARGE of Silver Pitt Creek two miles from mouth, for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 200 | | 140 | | 400 | 1-6 | 240 | 1-9 | 310 | 1-95 | 325 |
| 2 | 1-2 | 155 | 1-1 | 135 | 1-8 | 285 | | 260 | | 300 | | 300 |
| 3 | | 200 | | 120 | | 240 | 1-8 | 285 | | 290 | 1-8 | 285 |
| 4 | | 800 | 1-0 | 115 | 1-4 | 195 | | 280 | 1-8 | 285 | | 270 |
| 5 | 4-8 | 1,220 | | 140 | | 170 | | 270 | | 270 | 1-7 | 260 |
| 6 | | 1,200 | 1-25 | 165 | 1-15 | 145 | 1-7 | 260 | 1-7 | 260 | | 300 |
| 7 | 4-5 | 1,130 | | 160 | | 150 | | 270 | | 270 | | 300 |
| 8 | | 1,100 | | 160 | | 170 | 1-8 | 285 | 1-8 | 285 | 2-05 | 350 |
| 9 | 4-2 | 1,040 | 1-2 | 155 | 1-3 | 175 | | 260 | | 290 | | 320 |
| 10 | | 800 | | 170 | | 180 | 1-6 | 240 | | 300 | 1-8 | 285 |
| 11 | | 500 | 1-4 | 195 | 1-4 | 195 | | 250 | 1-9 | 310 | | 270 |
| 12 | 2-2 | 395 | | 210 | | 240 | | 250 | | 300 | 1-7 | 260 |
| 13 | | 350 | 1-55 | 230 | 1-8 | 285 | 1-7 | 260 | 1-8 | 285 | | 270 |
| 14 | 1-8 | 285 | | 200 | | 300 | | 400 | | 270 | | 280 |
| 15 | | 300 | | 200 | | 400 | 2-6 | 530 | 1-7 | 260 | 1-8 | 285 |
| 16 | 2-0 | 335 | 1-3 | 175 | 2-3 | 430 | | 480 | | 250 | | 270 |
| 17 | | 350 | | 160 | | 380 | 2-3 | 430 | 1-65 | 250 | 1-7 | 260 |
| 18 | | 370 | 1-15 | 145 | 2-0 | 335 | | 400 | | 260 | | 280 |
| 19 | 2-2 | 395 | | 130 | | 380 | | 350 | | 270 | 1-85 | 300 |
| 20 | | 360 | 1-0 | 115 | 2-3 | 430 | 2-0 | 335 | 1-8 | 285 | | 360 |
| 21 | 2-0 | 335 | | 200 | | 450 | | 320 | | 270 | 2-3 | 430 |
| 22 | | 300 | | 300 | | 500 | 1-9 | 310 | 1-7 | 260 | | 500 |
| 23 | 1-75 | 275 | 2-3 | 430 | 2-6 | 530 | | 390 | | 300 | 2-75 | 580 |
| 24 | | 250 | | 460 | | 500 | 1-75 | 275 | | 330 | | 540 |
| 25 | | 200 | 2-5 | 495 | 2-4 | 460 | | 280 | 2-1 | 360 | | 500 |
| 26 | 1-4 | 195 | | 530 | | 520 | | 280 | | 500 | 2-4 | 460 |
| 27 | | 180 | 2-7 | 565 | 2-75 | 580 | 1-8 | 285 | 2-9 | 630 | | 400 |
| 28 | 1-3 | 175 | | 500 | | 450 | | 290 | | 500 | | 300 |
| 29 | | 170 | | | | 300 | 1-85 | 300 | 2-3 | 430 | 1-55 | 230 |
| 30 | 1-2 | 155 | | | 1-8 | 285 | | 300 | | 400 | | 220 |
| 31 | | 150 | | | | 260 | | | | 370 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Silver Pitt Creek two miles from mouth, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.45 | 210 | | 60 | 0.4 | 35 | | 220 | 3.0 | 660 | | 550 |
| 2 | | 190 | 0.6 | 57 | 0.4 | 35 | 1.4 | 195 | | 560 | 2.4 | 460 |
| 3 | 1.25 | 165 | | 60 | | 30 | | 200 | 2.4 | 460 | | 330 |
| 4 | | 160 | | 65 | 0.35 | 30 | | 220 | 3.0 | 660 | 1.4 | 195 |
| 5 | | 150 | 0.7 | 70 | | 30 | 1.6 | 240 | 2.2 | 395 | | 150 |
| 6 | 1.15 | 145 | | 68 | | 35 | | 220 | 1.8 | 285 | 1.0 | 115 |
| 7 | | 140 | 0.65 | 63 | 0.4 | 35 | 1.4 | 195 | | 350 | | 100 |
| 8 | 1.1 | 135 | | 70 | | 60 | | 170 | | 500 | | 90 |
| 9 | | 140 | 0.75 | 77 | 0.8 | 84 | 1.2 | 155 | 3.0 | 660 | 0.7 | 70 |
| 10 | 1.15 | 145 | | 70 | | 140 | | 150 | | 800 | | 60 |
| 11 | | 140 | | 70 | 1.4 | 195 | | 130 | 3.8 | 910 | 0.45 | 40 |
| 12 | 1.1 | 135 | 0.65 | 63 | | 200 | 1.05 | 125 | | 600 | | 40 |
| 13 | | 150 | | 60 | | 220 | | 150 | 2.0 | 335 | 0.4 | 35 |
| 14 | 1.2 | 155 | 0.6 | 57 | 1.6 | 240 | 1.3 | 175 | | 300 | | 35 |
| 15 | | 160 | | 50 | | 350 | | 190 | | 200 | | 30 |
| 16 | 1.3 | 175 | 0.5 | 45 | 2.4 | 460 | 1.45 | 210 | 1.2 | 155 | 0.35 | 30 |
| 17 | | 150 | | 45 | | 560 | | 220 | | 140 | | 30 |
| 18 | 1.1 | 135 | | 40 | 3.0 | 560 | | 240 | 1.05 | 125 | 0.3 | 25 |
| 19 | | 130 | 0.45 | 40 | | 600 | 1.7 | 260 | | 200 | | 25 |
| 20 | 0.95 | 110 | | 40 | 2.6 | 530 | | 370 | 1.8 | 285 | | 25 |
| 21 | | 100 | 0.4 | 35 | | 600 | 2.45 | 480 | | 400 | 0.3 | 25 |
| 22 | 0.9 | 100 | | 35 | | 600 | | 540 | | 540 | | 30 |
| 23 | | 90 | 0.4 | 35 | 3.0 | 660 | 2.8 | 595 | 3.0 | 660 | 0.4 | 35 |
| 24 | 0.75 | 77 | | 35 | | 550 | | 700 | | 550 | | 50 |
| 25 | | 70 | | 35 | 2.4 | 460 | | 800 | 2.55 | 410 | 0.6 | 57 |
| 26 | 0.65 | 63 | 0.4 | 35 | | 400 | 3.5 | 820 | | 600 | | 70 |
| 27 | | 60 | | 30 | 2.0 | 335 | | 640 | 3.3 | 760 | | 80 |
| 28 | | 60 | 0.35 | 30 | | 300 | 2.4 | 460 | | 730 | 0.9 | 100 |
| 29 | 0.6 | 57 | | 30 | | 270 | | 400 | | 700 | | 150 |
| 30 | | 60 | 0.35 | 30 | 1.6 | 240 | 2.0 | 335 | 2.9 | 630 | 1.4 | 195 |
| 31 | 0.65 | 63 | | 35 | | | | 500 | | | | 250 |

MONTHLY DISCHARGE of Silver Pitt Creek, two miles from mouth, for 1914.

(Drainage area, 70 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January | 1,220 | 150 | 450 | 6.43 | 7.41 | 27,700 | C |
| February | 565 | 115 | 240 | 3.43 | 3.57 | 13,300 | C |
| March | 580 | 145 | 335 | 4.79 | 5.52 | 20,600 | C |
| April | 530 | 240 | 310 | 4.43 | 4.94 | 18,400 | C |
| May | 630 | 250 | 320 | 4.56 | 5.26 | 19,700 | C |
| June | 580 | 220 | 335 | 4.79 | 5.34 | 19,900 | C |
| July | 210 | 57 | 125 | 1.78 | 2.05 | 7,700 | C |
| August | 77 | 30 | 50 | 0.71 | 0.82 | 3,100 | D |
| September | 660 | 30 | 300 | 4.29 | 4.79 | 17,900 | C |
| October | 820 | 125 | 330 | 4.71 | 5.43 | 20,300 | C |
| November | 910 | 125 | 485 | 6.93 | 7.73 | 28,900 | C |
| December | 550 | 25 | 110 | 1.57 | 1.81 | 6,800 | C |
| The year | 1,220 | 25 | 280 | 4.04 | 54.67 | 204,300 | C |

SLOLLICUM CREEK (1033).

Location.—Near the mouth, in section 19, township 5, range 28 west of the 6th meridian.

Records Available.—Two meter measurements; a few gauge readings have been taken since May, 1914, which will be available when the station has been more fully rated.

Gauge.—Vertical staff; readings irregular.

Channel.—Rocks and gravel.

Discharge Measurements.—Two meter measurements in 1914.

Winter Flow.—Open water all year.

DISCHARGE MEASUREMENTS of Slollicum Creek near mouth, 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section | Mean Velocity | Gauge Height | Discharge. |
|--------------|------------------|-----------|-------|-----------------|---------------|--------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 23..... | C. G. Cline..... | 1521 | 22 | 20 | 1.9 | 1.60 | 36.4 |
| Aug. 26..... | "..... | 1933 | 17 | 8.5 | 0.3 | 0.82 | 2.2 |

SOUTH LILLOOET RIVER (1018).

Location.—At upper highway bridge, 8 miles from mouth in section 28, township 12, east of Coast meridian.

Records Available.—Daily discharges continuous since October, 1911.

Drainage Area.—One hundred square miles.

Gauge.—Chain gauge on bridge; readings daily.

Channel.—Permanent rocky channel.

Discharge Measurements.—Ten measurements during 1911, 1912, 1913 and 1914.

Winter Flow.—Open water all year.

Accuracy.—B.

DISCHARGE MEASUREMENTS of South Lillooet River 8 miles from mouth, 1911-12-13-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|----------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1911. | | | | | | | |
| Oct. 26..... | Cline and Smith..... | 1057 | 100 | 113 | 2.0 | 1.18 | 226 |
| Dec. 13..... | K. H. Smith..... | 1057 | 120 | 316 | 4.3 | 2.80 | 1360 |
| 1912. | | | | | | | |
| July 4..... | C. G. Cline..... | 1046 | 105 | 151 | 2.4 | 1.50 | 361 |
| Aug. 17..... | "..... | 1046 | 125 | 288 | 3.5 | 2.70 | 1010 |
| Sept. 10..... | "..... | 1046 | 115 | 234 | 3.3 | 2.00 | 767 |
| Nov. 13..... | "..... | 1046 | 125 | 608 | 8.1 | 4.60 | 4950 |
| 1913. | | | | | | | |
| May 22..... | "..... | 1044 | 125 | 266 | 4.4 | 2.45 | 1180 |
| July 10..... | Smith and Cline..... | 1055 | 125 | 296 | 3.8 | 2.40 | 1120 |
| 1914. | | | | | | | |
| Aug. 21..... | C. G. Cline..... | 1933 | 80 | 80 | 1.5 | 0.50 | 113 |
| Oct. 22..... | H. C. Hughes..... | 1933 | 125 | 371 | 5.5 | 3.12 | 2000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of South Lillooet River eight miles from mouth, 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.7 | 480 | 1.9 | 620 | 2.7 | 1,440 | 1.3 | 270 | 2.3 | 980 | 1.7 | 480 |
| 2 | 1.8 | 550 | 1.6 | 420 | 2.6 | 1,320 | 1.4 | 320 | 2.1 | 790 | 1.7 | 480 |
| 3 | 1.9 | 620 | 1.6 | 420 | 2.4 | 1,080 | 1.5 | 370 | 2.1 | 790 | 1.8 | 550 |
| 4 | 2.8 | 1,570 | 1.5 | 370 | 2.4 | 1,080 | 1.5 | 370 | 2.0 | 700 | 1.7 | 480 |
| 5 | 5.0 | 5,580 | 1.5 | 370 | 2.3 | 890 | 1.9 | 620 | 1.9 | 620 | 1.5 | 370 |
| 6 | 6.1 | 8,350 | 1.4 | 320 | 2.2 | 880 | 1.9 | 620 | 1.7 | 480 | 1.4 | 320 |
| 7 | 5.1 | 6,050 | 1.2 | 230 | 2.1 | 790 | 2.0 | 700 | 1.7 | 480 | 1.5 | 370 |
| 8 | 4.4 | 4,500 | 1.1 | 200 | 2.0 | 700 | 1.9 | 620 | 1.7 | 480 | 1.5 | 370 |
| 9 | 4.0 | 3,600 | 1.0 | 170 | 2.2 | 880 | 1.8 | 550 | 1.7 | 480 | 1.7 | 480 |
| 10 | 3.1 | 2,000 | 1.0 | 170 | 2.2 | 890 | 1.8 | 550 | 1.6 | 420 | 1.6 | 420 |
| 11 | 2.7 | 1,440 | 1.0 | 170 | 2.4 | 1,080 | 1.7 | 480 | 1.6 | 420 | 1.5 | 370 |
| 12 | 2.1 | 790 | 1.1 | 200 | 2.4 | 1,080 | 1.7 | 480 | 1.7 | 480 | 1.5 | 370 |
| 13 | 1.9 | 620 | 1.2 | 230 | 2.8 | 1,570 | 1.8 | 550 | 1.8 | 550 | 1.5 | 370 |
| 14 | 1.8 | 550 | 1.2 | 230 | 3.1 | 2,000 | 2.2 | 880 | 1.8 | 550 | 1.5 | 370 |
| 15 | 1.6 | 420 | 1.3 | 270 | 2.9 | 1,710 | 3.0 | 1,850 | 1.8 | 550 | 1.6 | 420 |
| 16 | 1.7 | 480 | 1.3 | 270 | 2.9 | 1,710 | 2.8 | 1,570 | 1.7 | 480 | 1.6 | 420 |
| 17 | 1.7 | 480 | 1.3 | 270 | 2.8 | 1,570 | 2.6 | 1,320 | 1.7 | 480 | 1.6 | 420 |
| 18 | 2.1 | 790 | 1.3 | 270 | 2.8 | 1,570 | 2.6 | 1,320 | 1.7 | 480 | 1.6 | 420 |
| 19 | 2.0 | 700 | 1.8 | 550 | 2.7 | 1,440 | 2.7 | 1,440 | 1.6 | 420 | 1.4 | 320 |
| 20 | 1.8 | 550 | 2.0 | 700 | 2.6 | 1,320 | 2.7 | 1,440 | 1.6 | 420 | 1.3 | 270 |
| 21 | 1.7 | 480 | 2.3 | 980 | 2.5 | 1,200 | 2.5 | 1,200 | 1.5 | 370 | 1.3 | 270 |
| 22 | 1.8 | 550 | 2.3 | 980 | 2.4 | 1,080 | 2.4 | 1,080 | 1.7 | 480 | 1.4 | 320 |
| 23 | 1.6 | 420 | 2.4 | 1,080 | 2.2 | 880 | 2.6 | 1,320 | 1.6 | 420 | 1.4 | 320 |
| 24 | 1.4 | 320 | 2.4 | 1,080 | 2.0 | 700 | 2.6 | 1,320 | 1.7 | 480 | 1.3 | 270 |
| 25 | 1.4 | 320 | 2.4 | 1,080 | 1.9 | 620 | 2.6 | 1,320 | 1.8 | 550 | 1.4 | 320 |
| 26 | 1.4 | 320 | 2.4 | 1,080 | 1.8 | 550 | 2.6 | 1,320 | 2.1 | 790 | 1.3 | 270 |
| 27 | 1.2 | 230 | 2.4 | 1,080 | 1.7 | 480 | 2.8 | 1,570 | 2.6 | 1,320 | 1.4 | 320 |
| 28 | 1.4 | 320 | 2.4 | 1,080 | 1.6 | 420 | 3.1 | 2,000 | 2.3 | 980 | 1.4 | 320 |
| 29 | 1.6 | 420 | | | 1.5 | 370 | 3.0 | 1,850 | 2.1 | 790 | 1.3 | 270 |
| 30 | 1.7 | 480 | | | 1.5 | 370 | 2.8 | 1,570 | 1.9 | 620 | 1.3 | 270 |
| 31 | 1.9 | 620 | | | 1.4 | 320 | | | 1.8 | 550 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of South Lillooet River eight miles from mouth, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-3 | 270 | 0-5 | 110 | 0-45 | 105 | 2-1 | 790 | 3-9 | 3,400 | 2-9 | 1,710 |
| 2..... | 1-2 | 230 | 0-5 | 110 | 0-45 | 105 | 2-0 | 700 | 4-5 | 4,700 | 2-7 | 1,440 |
| 3..... | 1-2 | 230 | 0-5 | 110 | 0-45 | 105 | 1-9 | 620 | 4-3 | 4,250 | 2-5 | 1,200 |
| 4..... | 1-2 | 230 | 0-5 | 110 | 0-45 | 105 | 1-8 | 550 | 4-3 | 4,250 | 2-35 | 1,030 |
| 5..... | 1-2 | 230 | 0-5 | 110 | 0-45 | 105 | 1-7 | 480 | 4-0 | 3,600 | 2-1 | 790 |
| 6..... | 1-1 | 200 | 0-5 | 110 | 0-45 | 105 | 1-5 | 370 | 3-2 | 2,150 | 1-9 | 620 |
| 7..... | 1-1 | 200 | 0-6 | 120 | 0-5 | 110 | 1-4 | 320 | 3-1 | 2,000 | 1-8 | 550 |
| 8..... | 1-0 | 170 | 0-6 | 120 | 0-6 | 120 | 1-4 | 320 | 3-1 | 2,000 | 1-7 | 480 |
| 9..... | 1-0 | 170 | 0-6 | 120 | 0-8 | 140 | 1-3 | 270 | 3-5 | 2,640 | 1-5 | 370 |
| 10..... | 1-0 | 170 | 0-5 | 110 | 0-9 | 150 | 1-2 | 230 | 3-2 | 2,150 | 1-4 | 320 |
| 11..... | 0-9 | 150 | 0-5 | 110 | 0-95 | 160 | 1-3 | 270 | 3-8 | 3,200 | 1-3 | 270 |
| 12..... | 0-9 | 150 | 0-5 | 110 | 1-0 | 170 | 1-5 | 370 | 3-2 | 2,150 | 1-25 | 250 |
| 13..... | 0-9 | 150 | 0-5 | 110 | 1-0 | 170 | 2-2 | 880 | 3-2 | 2,150 | 1-2 | 230 |
| 14..... | 0-9 | 150 | 0-5 | 110 | 1-2 | 230 | 2-1 | 790 | 2-8 | 1,570 | 1-1 | 200 |
| 15..... | 1-0 | 170 | 0-4 | 100 | 1-8 | 550 | 2-0 | 700 | 2-5 | 1,200 | 1-0 | 170 |
| 16..... | 0-9 | 150 | 0-4 | 100 | 1-8 | 550 | 2-2 | 880 | 2-3 | 980 | 0-95 | 160 |
| 17..... | 0-9 | 150 | 0-4 | 100 | 2-1 | 790 | 3-75 | 3,100 | 2-1 | 790 | 0-9 | 150 |
| 18..... | 0-9 | 150 | 0-4 | 100 | 2-8 | 1,570 | 4-3 | 4,250 | 1-7 | 480 | 0-9 | 150 |
| 19..... | 0-8 | 140 | 0-4 | 100 | 3-2 | 2,150 | 4-9 | 5,600 | 1-8 | 550 | 0-85 | 145 |
| 20..... | 0-8 | 140 | 0-4 | 100 | 3-2 | 2,150 | 4-4 | 4,500 | 2-0 | 700 | 0-85 | 145 |
| 21..... | 0-8 | 140 | 0-5 | 110 | 3-0 | 1,850 | 3-8 | 3,200 | 2-1 | 790 | 0-8 | 140 |
| 22..... | 0-7 | 130 | 0-5 | 110 | 2-7 | 1,440 | 3-1 | 2,000 | 2-2 | 880 | 0-8 | 140 |
| 23..... | 0-7 | 130 | 0-5 | 110 | 2-3 | 980 | 2-6 | 1,320 | 3-0 | 1,850 | 0-75 | 135 |
| 24..... | 0-7 | 130 | 0-5 | 110 | 2-0 | 700 | 2-3 | 980 | 3-3 | 2,300 | 0-8 | 140 |
| 25..... | 0-7 | 130 | 0-5 | 110 | 1-8 | 550 | 2-1 | 790 | 3-6 | 2,800 | 0-75 | 135 |
| 26..... | 0-7 | 130 | 0-5 | 110 | 1-8 | 550 | 1-9 | 620 | 3-9 | 3,400 | 0-8 | 140 |
| 27..... | 0-6 | 120 | 0-45 | 105 | 2-0 | 700 | 1-7 | 480 | 3-4 | 2,470 | 0-85 | 145 |
| 28..... | 0-6 | 120 | 0-45 | 105 | 2-6 | 1,320 | 1-5 | 370 | 4-0 | 3,600 | 0-9 | 150 |
| 29..... | 0-6 | 120 | 0-45 | 105 | 2-4 | 1,080 | 1-5 | 370 | 3-8 | 3,200 | 0-9 | 150 |
| 30..... | 0-6 | 120 | 0-45 | 105 | 2-2 | 880 | 1-5 | 370 | 3-2 | 2,150 | 0-9 | 150 |
| 31..... | 0-5 | 110 | 0-45 | 105 | ..... | ..... | 2-3 | 980 | ..... | ..... | 1-1 | 200 |

MONTHLY DISCHARGE of South Lillooet River eight miles from mouth, for 1914.

(Drainage area, 100 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| January..... | 8,350 | 230 | 1,450 | 14-50 | 16-70 | 89,200 | C |
| February..... | 1,080 | 170 | 532 | 5-32 | 5-54 | 29,500 | B |
| March..... | 2,000 | 320 | 1,040 | 10-40 | 12-00 | 63,900 | B |
| April..... | 2,000 | 270 | 1,030 | 10-30 | 11-50 | 61,300 | B |
| May..... | 1,320 | 370 | 594 | 5-94 | 6-85 | 36,500 | B |
| June..... | 550 | 270 | 367 | 3-67 | 4-10 | 21,800 | B |
| July..... | 270 | 110 | 161 | 1-61 | 1-86 | 9,900 | B |
| August..... | 120 | 100 | 108 | 1-08 | 1-24 | 6,600 | B |
| September..... | 2,150 | 105 | 656 | 6-56 | 7-32 | 39,000 | B |
| October..... | 5,600 | 230 | 1,210 | 12-10 | 13-95 | 74,400 | B |
| November..... | 4,700 | 480 | 2,280 | 22-80 | 25-44 | 135,700 | B |
| December..... | 1,710 | 135 | 387 | 3-87 | 4-46 | 23,800 | B |
| The year..... | 8,350 | 100 | 818 | 8-18 | 110-96 | 591,600 | B |

SESSIONAL PAPER No. 25e

SUMALLO RIVER (1056).

Location.—One mile from mouth and just south of the Railway Belt boundary.

Records Available.—Daily discharges beginning July, 1914.

Drainage Area.—Seventy square miles (above mouth).

Gauge.—Vertical Staff.

Channel.—Rocky.

Discharge Measurements.—Six meter measurements by the engineers of the British Columbia Hydrographic Survey and four by L. N. Jensen. One measurement under ice conditions.

Winter Flow.—Stream open all winter, but during very cold weather anchor ice may affect the ordinary relation between gauge height and discharge to some extent.

Co-operation.—Four meter measurements were made during 1913 and 1914 by L. N. Jensen for MacKenzie & Mann.

SUMALLO RIVER.

The Sumallo river rises in the mountains south west of Hope, and flows in a general southeasterly direction to its junction with the Skagit river, some 15 miles north of the international boundary line, and 2 miles from the boundary



Installing metal-faced gauge at metering section on Sumallo river one mile from mouth.

of the Railway Belt. Some of the mountains in its watershed rise to an altitude of 5,000 feet. It has a drainage area of 70 square miles. The precipitation is probably more than 90 inches per annum. In the winter the snow fall is quite heavy.

The pack trail from Hope to Princeton follows the Sumallo river for a distance of 7 or 8 miles. It was proposed at one time to improve it into a wagon road, but the plan was never completely carried through, and of late years the trail has been merely kept in repair for pack horses. When the Pacific highway is completed, it will improve the means of transportation in this part of the country.

There is very little settlement or development in the Sumallo river valley. What little farming land there is is not worked to any great extent. There are some mining prospects, and just recently one mine, near the mouth of the river, has shipped a small quantity of ore. This may lead to some further development.

There is a proposal to divert water from the upper part of the Sumallo river into the lakes which feed the Nicolium river. This would augment the flow of the Nicolium sufficiently to make a power development practicable, but would divert a certain amount of water from the plants which expect to use water from the Skagit river on the American side of the boundary.

This diversion, however, might lead to the most beneficial use of the water, since it could be utilized under a head of something like two thousand feet.

In connection with the above-mentioned plan of development, two gauging stations have been established on the streams. One of these is near the mouth and measures the total flow of the stream. Daily gauge readings are taken at this station. Measurements are made also at a point some 7 miles above the lower station, but gauge readings can be taken only occasionally. The flow at this upper station gives approximately the amount of water which can be diverted into the Nicolium lake and is considerably less than the flow measured at the lower station.

DISCHARGE MEASUREMENTS of Sumallo River at one mile from mouth, 1913-14-15.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------|-----------|--------|------------------|----------------|---------------|-----------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Sept. 19..... | L. N. Jenssen..... | | | 76 | 2.3 | 1.00 | 175 |
| Nov. 11..... | do..... | | | 76 | 2.3 | 1.00 | 175 |
| 1914. | | | | | | | |
| June 11..... | do..... | | | 130 | 3.8 | 2.40 | 502 |
| July 12..... | C. G. Cline..... | 1933 | 44 | 108 | 3.4 | 2.00 | 355 |
| " 15..... | do..... | 1933 | 44 | 100 | 3.1 | 1.72 | 299 |
| " 18..... | L. N. Jenssen..... | | | 93 | 3.1 | 1.50 | 279 |
| Dec. 16..... | H. C. Hughes..... | | 39 | 57 | 1.3 | 0.74 | 76 ¹ |
| 1915. | | | | | | | |
| Mar. 11..... | Hughes & Cline..... | 1521 | 30 | 41 | 1.3 | 0.22 | 54 |
| " 15..... | do..... | 1521 | 40 | 62 | 1.9 | 6.77 | 118 |
| " 29..... | H. C. Hughes..... | 1521 | 42 | 67 | 2.1 | 1.00 | 143 |

¹ Probably affected by ice.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Sumallo River near mouth, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0.9 | 135 | 0.5 | 80 | 0.5 | 80 | 0.9 | 135 | 1.5 | 245 |
| 2 | | | 0.9 | 135 | 0.5 | 80 | 0.5 | 80 | 1.6 | 265 | 1.5 | 245 |
| 3 | | | 0.9 | 135 | 0.5 | 80 | 0.5 | 80 | 1.8 | 310 | 1.3 | 205 |
| 4 | | | 0.9 | 135 | 0.5 | 80 | C-4 | 70 | 1.7 | 290 | 1.3 | 205 |
| 5 | | | 0.9 | 135 | 0.5 | 80 | C-4 | 70 | 1.6 | 265 | 1.3 | 205 |
| 6 | | | 0.9 | 135 | 0.4 | 70 | 0.4 | 70 | 1.7 | 290 | 1.2 | 185 |
| 7 | | | 0.9 | 135 | 0.4 | 70 | 0.4 | 70 | 1.7 | 290 | 1.1 | 165 |
| 8 | | | 0.9 | 135 | 0.6 | 90 | C-4 | 70 | 1.6 | 265 | 1.0 | 150 |
| 9 | | | 0.8 | 120 | 0.6 | 90 | 0.5 | 80 | 1.6 | 265 | 0.8 | 120 |
| 10 | | | 0.8 | 120 | 0.7 | 105 | 0.5 | 80 | 1.6 | 265 | 0.6 | 90 |
| 11 | | | 0.8 | 120 | 0.6 | 90 | 0.5 | 80 | 1.6 | 265 | 0.6 | 90 |
| 12 | 2.0 | 360 | 0.8 | 120 | 0.6 | 90 | 0.5 | 80 | 1.5 | 245 | 0.6 | 90 |
| 13 | | | 0.8 | 120 | 0.6 | 90 | 0.5 | 80 | 1.5 | 245 | 0.5 | 80 |
| 14 | | | 0.8 | 120 | 0.6 | 90 | 0.5 | 80 | 1.5 | 245 | 0.5 | 80 |
| 15 | 1.7 | 290 | 0.8 | 120 | 0.6 | 90 | C-5 | 80 | 1.5 | 245 | 0.5 | 80 |
| 16 | 1.6 | 265 | 0.8 | 120 | 0.5 | 80 | 0.5 | 80 | 1.5 | 245 | 0.5 | 80 |
| 17 | 1.5 | 245 | 0.8 | 120 | 0.5 | 80 | C-5 | 80 | 1.4 | 225 | 0.5 | 80 |
| 18 | 1.5 | 245 | 0.7 | 105 | C-6 | 90 | 0.6 | 90 | 1.3 | 205 | 0.5 | 80 |
| 19 | 1.6 | 265 | 0.7 | 105 | 0.7 | 105 | 0.6 | 90 | 1.3 | 205 | 0.5 | 80 |
| 20 | 1.6 | 265 | 0.7 | 105 | 0.7 | 105 | 0.6 | 90 | 1.3 | 205 | C-5 | 80 |
| 21 | 1.7 | 290 | 0.6 | 90 | 0.7 | 105 | 0.7 | 105 | 1.3 | 205 | 0.5 | 80 |
| 22 | 1.4 | 225 | C-6 | 90 | 0.7 | 105 | 0.7 | 105 | 1.4 | 225 | 0.5 | 80 |
| 23 | 1.3 | 205 | 0.6 | 90 | 0.6 | 90 | 0.6 | 90 | 1.4 | 225 | 0.5 | 80 |
| 24 | 1.2 | 185 | 0.6 | 90 | 0.6 | 90 | 0.6 | 90 | 1.7 | 290 | 0.4 | 70 |
| 25 | 1.1 | 165 | 0.6 | 90 | 0.6 | 90 | 0.6 | 90 | 1.7 | 290 | 0.4 | 70 |
| 26 | 1.1 | 165 | 0.6 | 90 | 0.6 | 90 | 0.6 | 90 | 1.7 | 290 | 0.4 | 70 |
| 27 | 1.1 | 165 | 0.6 | 90 | 0.6 | 90 | 0.6 | 90 | 1.7 | 290 | 0.4 | 70 |
| 28 | 1.0 | 150 | 0.6 | 90 | 0.6 | 90 | 0.6 | 90 | 1.6 | 265 | 0.4 | 70 |
| 29 | 1.0 | 150 | 0.6 | 90 | 0.6 | 90 | 0.7 | 105 | 1.5 | 245 | 0.4 | 70 |
| 30 | 0.9 | 135 | 0.6 | 90 | 0.5 | 80 | 0.7 | 105 | 1.5 | 245 | 0.4 | 70 |
| 31 | 0.9 | 135 | 0.6 | 90 | | | 0.7 | 105 | | | 0.4 | 70 |

MONTHLY DISCHARGE of Sumallo River near mouth, for 1914.

(Drainage area, 70 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|-----------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area. | Total in acre-feet |
| August | 135 | 90 | 112 | 1.7 | 2.0 | 6,890 |
| September | 105 | 70 | 88 | 1.3 | 1.4 | 5,240 |
| October | 105 | 70 | 85 | 1.2 | 1.4 | 5,230 |
| November | 310 | 135 | 251 | 3.6 | 4.0 | 14,900 |
| December | 245 | 70 | 111 | 1.6 | 1.8 | 6,820 |

Accuracy, "B".

SUMALLO RIVER (1057).

Location.—Eight miles from mouth in section 28, township 3, range 24, west of 6th meridian.

Records Available.—Irregular records beginning in July, 1914.

Gauge.—Vertical staff.

Channel.—Gravel.

Discharge Measurements.—Five meter measurements, one of them under ice conditions.

Winter Flow.—Station is somewhat affected by ice during very cold weather.

DISCHARGE MEASUREMENTS of Sumallo River eight miles from mouth, 1914-15

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| July 16. | C. G. Cline..... | 1933 | 40 | 73 | 2.4 | 1.80 | 167 ¹ |
| Dec. 16. | H. C. Hughes..... | 1521 | 27 | 15 | 2.9 | 1.00 | 44 ² |
| 1915. | | | | | | | |
| Mar. 15. | Hughes & Cline..... | 1521 | 36 | 43 | 1.3 | 1.05 | 59 |
| " 30. | H. C. Hughes..... | 1521 | 37 | 50 | 1.6 | 1.25 | 80 |

¹ Station established.

² Probably affected by ice.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Sumallo River eight miles from mouth, for 1914.

| DAY | July. | | August. | | September. | | October. | | November. | | December. | |
|-----|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | 1-2 | 80 | | | | |
| 4 | | | | | | | 1-0 | 50 | | | 1-5 | 120 |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | 1-4 | 105 |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | 1-2 | 80 | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | 1-3 | 90 | | | | | | | | |
| 13 | | | | | | | | | | | 1-3 | 90 |
| 14 | | | | | 1-1 | 65 | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | 1-8 | 165 | | | | | | | | | | |
| 17 | | | 1-2 | 80 | | | | | | | | |
| 18 | | | | | | | | | 1-4 | 105 | | |
| 19 | | | | | | | 1-3 | 90 | | | | |
| 20 | | | | | | | | | 1-55 | 130 | | |
| 21 | | | | | | | 1-2 | 80 | 1-6 | 135 | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | 1-9 | 135 | | |
| 25 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 29 | | | | | 1-0 | 50 | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | | | 1-1 | 65 | | | | | | | | |

YOUNG CREEK (1020).

Location.—At mouth, in section 10, township 7, range 7, west of 7th meridian.

Records Available.—Continuous since October 20, 1912, but gauge readings were not always taken very frequently.

Drainage Area.—Not known.

Gauge.—Vertical staff.

Channel.—Solid rock.

Discharge Measurements.—Eight meter measurements taken during 1913 and 1914.

Winter Flow.—Heavy snowfall but not much ice, so that open water conditions obtain practically all winter.

Accuracy.—C and D.

Co-operation.—Gauge readings taken by Westminster Power Company.

DISCHARGE MEASUREMENTS of Young Creek at mouth, 1913-14.

| Date. | Hydrographer. | Meter No. | Width. | | Mean Velocity. | | Gauge Height. | | Discharge. | |
|---------------|--------------------|-----------|--------|---------|----------------|-------|-------------------|--|------------|--|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. | | | |
| 1913. | | | | | | | | | | |
| June 3..... | H. C. Hughes... | 1,673 | 18 | 21.8 | 2.5 | 1.80 | 53.6 ¹ | | | |
| " 10..... | " | 1,673 | 14 | 15.4 | 2.0 | 1.50 | 30.0 | | | |
| " 18..... | " | 1,673 | 13 | 16.4 | 2.3 | 1.65 | 37.0 | | | |
| July 31..... | " | 1,673 | 11 | 7.7 | 0.8 | 1.03 | 6.2 | | | |
| Sept. 18..... | F. MacLachlan... | 1,673 | 10 | 10.8 | 0.8 | 1.01 | 8.6 | | | |
| 1914. | | | | | | | | | | |
| May 18..... | F. MacLachlan..... | 1,521 | 15 | 15.4 | 2.0 | 1.48 | 29.0 | | | |
| July 31..... | C. G. Cline..... | 1,933 | 8 | | | 0.92 | 4.3 | | | |
| Nov. 14..... | H. C. Hughes..... | 1,933 | 12 | 10.9 | 1.0 | 1.18 | 10.9 | | | |

¹Several different sections used.

DAILY GAUGE HEIGHT AND DISCHARGE of Young Creek at mouth, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 0.85 | 4 | | | | | | | 28 | 24 |
| 2..... | | | | | | | | | | | 28 | 22 |
| 3..... | | | | | | | | | | | 28 | 20 |
| 4..... | | | | | | | | | | | 28 | 19 |
| 5..... | 1.8 | 53 | | | 1.2 | 13 | | | | | 28 | 14 |
| 6..... | | | | | | | 1.6 | 35 | 1.5 | | 28 | 1.1 |
| 7..... | | | | | | | | | | | 28 | 12 |
| 8..... | | | | | | | | | | | 28 | 14 |
| 9..... | | | | | | | | | | | 28 | 16 |
| 10..... | | | | | | | | | | | 28 | 18 |
| 11..... | | | | | | | | | | | 28 | 1.35 |
| 12..... | | | | | | | | | | | 28 | 19 |
| 13..... | | | | | | | | | | | 28 | 1.4 |
| 14..... | | | | | | | | | | | 28 | 22 |
| 15..... | | | | | | | | | | | 28 | 22 |
| 16..... | | | | | | | | | | | 28 | 22 |
| 17..... | | | | | | | | | | | 28 | 1.4 |
| 18..... | | | | | | | | | 1.5 | | 28 | 20 |
| 19..... | | | 1.2 | 13 | 1.6 | 35 | | | 30 | 1.35 | 30 | 1.35 |
| 20..... | | | | | | | | | 35 | 1.3 | 35 | 1.3 |
| 21..... | | | | | | | | | | | 40 | 17 |
| 22..... | | | | | | | | | | | 44 | 17 |
| 23..... | | | | | | | | | | | 42 | 17 |
| 24..... | | | | | | | | | | | 40 | 17 |
| 25..... | | | | | | | | | | | 38 | 17 |
| 25..... | | | | | | | | | | | 38 | 17 |
| 26..... | | | | | | | | | | | 36 | 17 |
| 27..... | | | | | | | | | | | 34 | 17 |
| 28..... | | | | | | | | | | | 32 | 17 |
| 29..... | | | | | | | | | | | 30 | 17 |
| 30..... | | | | | | | 1.5 | 28 | 1.5 | | 28 | 17 |
| 31..... | | | | | 1.2 | 13 | | | | | 26 | 17 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Young Creek at mouth, for 1914
—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 17 | | 6 | 0-68 | 2 | | 15 | | 100 | 1-25 | 15 |
| 2 | 1-3 | 17 | | 5 | | 2 | | 15 | 2-60 | 130 | | 15 |
| 3 | | 16 | 0-9 | 5 | | 3 | 1-2 | 13 | | 120 | | 15 |
| 4 | | 15 | | 5 | | 4 | | 13 | | 110 | | 10 |
| 5 | | 14 | | 5 | | 5 | | 12 | | 100 | 1-10 | 10 |
| 6 | | 13 | | 5 | | 6 | | 12 | | 90 | | 9 |
| 7 | | 11 | | 4 | | 7 | | 11 | 2-10 | 82 | | 8 |
| 8 | 1-1 | 10 | | 4 | 1-00 | 7 | | 11 | | 79 | 1-00 | 7 |
| 9 | | 10 | | 4 | 1-00 | 7 | | 10 | | 60 | | 7 |
| 10 | 1-1 | 10 | 0-8 | 3-5 | | 10 | 1-10 | 10 | | 40 | 1-00 | 7 |
| 11 | | 10 | | 3-5 | | 10 | | 10 | 1-50 | 28 | | 7 |
| 12 | | 9 | | 3-5 | | 15 | | 10 | | 25 | | 6 |
| 13 | 1-05 | 8 | | 3-5 | | 15 | | 20 | | 20 | | 6 |
| 14 | | 8 | 0-8 | 3-5 | | 20 | | 30 | 1-20 | 13 | 0-95 | 6 |
| 15 | | 9 | 0-8 | 3-5 | | 20 | | 40 | | 11 | | 6 |
| 16 | 1-1 | 10 | | 3-5 | | 60 | | 60 | 1-10 | 10 | | 6 |
| 17 | | 10 | | 3-5 | | 80 | | 100 | | 20 | | 6 |
| 18 | 1-1 | 10 | 0-8 | 3-5 | 2-4 | 110 | 3-0 | 170 | | 40 | 0-95 | 6 |
| 19 | | 9 | | 3-5 | | 80 | | 150 | | 50 | | 6 |
| 20 | 1-05 | 8 | 0-8 | 3-5 | 1-7 | 44 | | 100 | | 60 | | 5 |
| 21 | | 8 | | 3-5 | | 40 | | 70 | 2-00 | 73 | 0-90 | 5 |
| 22 | | 8 | 0-8 | 3-5 | | 40 | | 50 | | 80 | | 5 |
| 23 | | 7 | | 3-5 | | 35 | | 15 | 2-10 | 82 | 0-85 | 4 |
| 24 | 1-0 | 7 | | 3 | | 35 | | 13 | | 60 | | 4 |
| 25 | | 8 | 0-75 | 3 | | 30 | | 10 | | 50 | | 4 |
| 26 | | 9 | | 3 | | 30 | | 10 | 1-55 | 30 | | 5 |
| 27 | 1-08 | 10 | 0-73 | 3 | | 25 | | 10 | | 40 | | 5 |
| 28 | | 9 | | 3 | 1-45 | 25 | 1-05 | 8 | 1-80 | 53 | 0-90 | 5 |
| 29 | | 8 | 0-72 | 3 | | 20 | | 20 | | 40 | | 10 |
| 30 | 0-95 | 7 | | 3 | | 20 | | 40 | | 30 | 1-30 | 17 |
| 31 | 0-93 | 6 | | 3 | | | | 60 | | | | 20 |

MONTHLY DISCHARGE of Young Creek at mouth, for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | Accuracy. |
|-----------|---------------------------|----------|-------|-----------|
| | Maximum. | Minimum. | Mean. | |
| May | | | 31 | D |
| June | | 10 | 18 | D |
| July | 17 | 6 | 10 | C |
| August | 6 | 3 | 3-7 | C |
| September | 110 | 2 | 27 | D |
| October | 170 | 10 | 36 | D |
| November | 130 | 10 | 57 | D |
| December | 20 | 4 | 8 | D |

BIG QUALICUM RIVER (1032).

Location.—One thousand feet upstream from Esquimalt and Nanaimo Railway bridge; 40 miles from Nanaimo.

Records Available.—Gauge readings daily, May 21, 1914, to December 31, 1914.

Drainage Area.—Sixty-two square miles.

Gauge.—Eighteen-foot wooden staff, located on left bank about one hundred feet above Esquimalt and Nanaimo Railway bridge.

Channel.—Gravel bed, very even, straight run for 500 feet on both sides of section.

Discharge Measurements.—One in 1913 by Provincial Water Rights Branch; four in 1914, covering all but high stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 30 and 300 cu. feet per second, accuracy B. Above discharge of 300 cubic feet, per second, accuracy C.

Co-operation.—Gauge installed in 1913 by Provincial Water Rights Branch.

BIG QUALICUM RIVER (1032).

The Big Qualicum river rises in Horne lake at an elevation of 380 feet, and is about 6 miles in length. It flows in an easterly direction, with a fairly even fall, to its mouth in the strait of Georgia, about 40 miles north from Nanaimo. The drainage area, which covers 62 square miles, is thickly wooded, although some timber has been taken off. The stream is metered about one mile and a half from its mouth. The precipitation varies from 40 to 50 inches. Horne lake covers an area of about 4 square miles, affording good storage possibilities.

For a power development, considerable water would have to be stored in the lake, due to the low flow during the summer months. A long pipeline would be the only possible development on this stream for a fair sized plant.

The Esquimalt and Nanaimo railway and the Island highway both cross the stream near its mouth, and quite a few settlers have recently come into the district.

DISCHARGE MEASUREMENTS of Big Qualicum River $1\frac{1}{2}$ miles from mouth, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|------------------|------------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 21. | Cotton & Webb. | 1,057 | 46 | 105.0 | 1.33 | 2.20 | 140 ¹ |
| July 9. | " " " " | 1,057 | 44 | 51.3 | 1.39 | 1.80 | 71.3 |
| Aug. 30. | C. E. Webb. | 1,057 | 38 | 37.5 | 0.72 | 1.45 | 26.9 |
| Dec. 10. | " " " " | 1,933 | 61 | 92.9 | 2.87 | 2.60 | 267 |

¹Station established. Cable carrier installed at new section.

MONTHLY DISCHARGE of Big Qualicum River near mouth, for 1914.

(Drainage area, 62 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|--------------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June | 140 | 100 | 114 | 1.81 | 2.05 | 6,780 | B |
| July | 100 | 40 | 59 | 0.95 | 1.10 | 3,630 | B |
| August | 40 | 30 | 31 | 0.56 | 0.58 | 1,910 | B |
| September. | 120 | 30 | 55 | 0.89 | 0.99 | 3,270 | B |
| October | 1,660 | 86 | 572 | 9.22 | 10.63 | 35,200 | C |
| November. | 1,310 | 420 | 730 | 11.77 | 13.14 | 43,400 | C |
| December. | 690 | 100 | 229 | 3.70 | 4.27 | 14,100 | C |

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DAILY GAUGE HEIGHT AND DISCHARGE OF Big Qualicum River near mouth, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | October. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 2-1 | 120 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 2-1 | 120 |
| 2..... | | | 2-1 | 120 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 2-1 | 120 |
| 3..... | | | 2-1 | 120 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 2-1 | 120 |
| 4..... | | | 2-2 | 140 | 1-9 | 80 | 1-6 | 40 | 1-5 | 30 | 2-1 | 120 |
| 5..... | | | 2-1 | 120 | 1-9 | 80 | 1-5 | 30 | 1-5 | 30 | 2-1 | 120 |
| 6..... | | | 2-1 | 120 | 1-9 | 80 | 1-5 | 30 | 1-5 | 30 | 2-1 | 120 |
| 7..... | | | 2-2 | 140 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 2-0 | 100 |
| 8..... | | | 2-2 | 140 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 2-0 | 100 |
| 9..... | | | 2-2 | 140 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 1-9 | 80 |
| 10..... | | | 2-1 | 120 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 1-9 | 80 |
| 11..... | | | 2-1 | 120 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 1-9 | 80 |
| 12..... | | | 2-1 | 120 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 2-3 | 170 |
| 13..... | | | 2-1 | 120 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 5-2 | 1,660 |
| 14..... | | | 2-1 | 120 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 4-6 | 1,240 |
| 15..... | | | 2-1 | 120 | 1-8 | 65 | 1-5 | 30 | 1-5 | 30 | 4-0 | 890 |
| 16..... | | | 2-1 | 120 | 1-7 | 50 | 1-5 | 30 | 1-6 | 40 | 4-3 | 1,060 |
| 17..... | | | 2-1 | 120 | 1-7 | 50 | 1-5 | 30 | 1-6 | 40 | 4-8 | 1,380 |
| 18..... | | | 2-0 | 100 | 1-7 | 50 | 1-5 | 30 | 1-6 | 40 | 4-8 | 1,380 |
| 19..... | | | 2-0 | 100 | 1-7 | 50 | 1-5 | 30 | 1-9 | 80 | 4-8 | 1,380 |
| 20..... | | | 2-0 | 100 | 1-7 | 50 | 1-5 | 30 | 1-9 | 80 | 4-8 | 1,380 |
| 21..... | 2-4 | 200 | 2-0 | 100 | 1-7 | 50 | 1-5 | 30 | 1-9 | 80 | 4-4 | 1,120 |
| 22..... | 2-3 | 170 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 1-9 | 80 | 3-9 | 840 |
| 23..... | 2-2 | 140 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 1-9 | 80 | 3-6 | 690 |
| 24..... | 2-2 | 140 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 1-9 | 80 | 3-5 | 640 |
| 25..... | 2-2 | 140 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 1-9 | 80 | 3-2 | 500 |
| 26..... | 2-2 | 140 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 1-9 | 80 | 3-1 | 460 |
| 27..... | 2-3 | 170 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 2-0 | 100 | 3-0 | 420 |
| 28..... | 2-2 | 140 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 2-0 | 100 | 2-8 | 340 |
| 29..... | 2-2 | 140 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 2-1 | 120 | 2-7 | 300 |
| 30..... | 2-2 | 140 | 2-0 | 100 | 1-6 | 40 | 1-5 | 30 | 2-1 | 120 | 2-7 | 300 |
| 31..... | 2-1 | 120 | ..... | ..... | 1-6 | 40 | 1-5 | 30 | ..... | ..... | 3-0 | 420 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Big Qualicum River near mouth,
for 1914—*Con.*

| DAY. | November. | | December. | |
|---------|--------------|-------------|--------------|-------------|
| | Gauge Height | Dis-charge. | Gauge Height | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3-3 | 540 | 3-6 | 690 |
| 2..... | 3-7 | 740 | 3-4 | 590 |
| 3..... | 3-9 | 840 | 3-1 | 460 |
| 4..... | 4-2 | 1,000 | 3-0 | 420 |
| 5..... | 4-0 | 890 | 2-8 | 340 |
| 6..... | 3-7 | 740 | 2-7 | 300 |
| 7..... | 3-7 | 740 | 2-7 | 300 |
| 8..... | 3-7 | 740 | 2-6 | 260 |
| 9..... | 3-8 | 790 | 2-6 | 260 |
| 10..... | 3-8 | 790 | 2-6 | 260 |
| 11..... | 3-8 | 790 | 2-5 | 230 |
| 12..... | 3-7 | 740 | 2-5 | 230 |
| 13..... | 3-7 | 740 | 2-4 | 200 |
| 14..... | 3-3 | 540 | 2-4 | 200 |
| 15..... | 3-1 | 460 | 2-4 | 200 |
| 16..... | 3-0 | 420 | 2-3 | 170 |
| 17..... | 3-0 | 420 | 2-3 | 170 |
| 18..... | 3-0 | 420 | 2-3 | 170 |
| 19..... | 3-0 | 420 | 2-3 | 170 |
| 20..... | 3-1 | 460 | 2-3 | 170 |
| 21..... | 3-1 | 460 | 2-2 | 140 |
| 22..... | 3-7 | 740 | 2-2 | 140 |
| 23..... | 3-9 | 840 | 2-1 | 120 |
| 24..... | 3-9 | 840 | 2-1 | 120 |
| 25..... | 4-7 | 1,310 | 2-0 | 100 |
| 26..... | 4-5 | 1,180 | 2-0 | 100 |
| 27..... | 4-1 | 940 | 2-0 | 100 |
| 28..... | 4-0 | 890 | 2-1 | 120 |
| 29..... | 3-8 | 790 | 2-1 | 120 |
| 30..... | 3-6 | 690 | 2-1 | 120 |
| 31..... | | | 2-1 | 120 |

CAMPBELL RIVER, VANCOUVER ISLAND (1042).

Location.—At outlet from Campbell lake.

Records Available.—Gauge readings twice daily; June 2—December 31, 1914; Campbell River Power Company have also done work during 1913 and 1914.

Drainage Area.—Seven hundred and eighty square miles.

Gauge.—Twelve-foot enamel staff—in sections located 1,000 feet above measuring section.

Channel.—Gravel and boulder bed; channel straight for 300 feet above section; rapids 100 feet below.

Discharge Measurements.—Four in 1914 covering all stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 1,000 and 12,000 cubic feet per second accuracy B. above discharge 12,000 cubic feet per second, accuracy D.

CAMPBELL RIVER (1042).

Campbell river flows from Campbell lake to the sea in Discovery passage, a distance of about 9 miles. It is the outlet of a chain of lakes which extend from the interior of the island amongst a large group of mountains. Buttes

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lake at the upper end drains into Upper Campbell lake, which in turn drains into Campbell lake. The stream is metered at the outlet from Campbell lake, and the drainage area above the metering section is some 780 square miles. The precipitation is high, varying from 80 inches at mouth of river to 130 inches at headwaters. Due to the presence of snow and ice on the mountains, the flow in summer is kept up much better than the streams in the southern parts of the island. The altitude of Campbell lake is about 500 feet.

The river is fast, and the fall fairly even for about 2 miles from Campbell lake. The river then narrows in and falls about 20 feet. With rapids for a quarter of a mile below, it drops another 30 feet, and finally has a sheer fall of 90 feet over a solid rock cliff into a deep, narrow canyon. This makes a good location for a power development. A head of 140 feet may be obtained in less than half a mile.

Another development, which would greatly increase the head, would be a tunnel from McIvor lake to a point below the falls, a distance of approximately 2 miles. McIvor lake is about one-quarter of a mile below Campbell lake, and is practically a bay on the river. It is well situated for the storage of water but the grade of the government road, which runs along one side of this lake, would have to be raised.

The Government at present are constructing a road from the mouth of Campbell river to Strathcona park, which, when completed, will be one of the finest in the country.

The timber which lies in the drainage is excellent and practically none has been cut. There are few settlers at present except at the mouth where some very fine land is under cultivation.

The Campbell River Power Company hold water records on Campbell river, and it is believed they will develop power at the falls in the near future.

DISCHARGE MEASUREMENTS of Campbell River at Campbell Lake, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|------------|--------------------|-----------|--------|------------------|----------------|---------------|---------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| June 2 .. | Cotton & Webb. | 1,057 | 180 | 1,170 | 4.1 | 2.95 | 4,750 ¹ |
| July 26 .. | C. P. Cotton | 1,057 | 210 | 1,250 | 3.8 | 3.13 | 4,710 |
| Sept. 6 .. | C. E. Webb | 1,057 | 95 | 362 | 2.7 | 0.32 | 977 |
| Nov. 13 .. | " | 1,057 | 240 | 2,000 | 6.1 | 6.58 | 12,200 ² |

¹Station established. ²Partly estimated.

MONTHLY DISCHARGE of Campbell River at Campbell Lake, for 1914.

Drainage area 780 square miles.

| MONTH. | DISCHARGE IN SECOND-FEET | | | | Run-Off | | Accuracy |
|-----------------|--------------------------|----------|--------|-----------------|-----------------------------------|--------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area. | Total in acre-feet | |
| June | 960 | 3,990 | 5,410 | 6.94 | 7.74 | 322,000 | B |
| July | 6,660 | 2,440 | 4,700 | 6.03 | 6.95 | 280,000 | B |
| August | 2,370 | 1,300 | 1,980 | 2.54 | 2.93 | 129,000 | B |
| September | 2,820 | 800 | 1,550 | 1.99 | 2.22 | 92,200 | B |
| October | 21,700 | 1,160 | 7,820 | 10.00 | 11.50 | 480,000 | D |
| November | 17,600 | 4,410 | 10,330 | 13.25 | 14.70 | 618,000 | D |
| December | 9,540 | 800 | 2,690 | 3.45 | 4.00 | 165,000 | B |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell River at Campbell Lake, for 1914.

| DAY. | June. | | July. | | August. | | September. | | October. | | November. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 4,500 | 3-4 | 5,330 | 1-42 | 2,300 | 0-58 | 1,250 | 1-35 | 2,200 | 4-6 | 7,710 |
| 2 | 2-95 | 4,570 | 3-65 | 5,800 | 1-4 | 2,270 | 0-5 | 1,160 | 1-37 | 2,230 | 5-07 | 8,710 |
| 3 | 3-2 | 4,990 | 3-85 | 6,200 | 1-4 | 2,270 | 0-45 | 1,100 | 1-27 | 2,100 | 5-33 | 9,280 |
| 4 | 3-45 | 5,420 | 4-05 | 6,600 | 1-4 | 2,270 | 0-43 | 1,080 | 1-1 | 1,880 | 5-67 | 10,000 |
| 5 | 3-35 | 5,250 | 4-08 | 6,660 | 1-4 | 2,270 | 0-4 | 1,050 | 0-98 | 1,730 | 5-65 | 9-980 |
| 6 | 3-15 | 4,900 | 4-02 | 6,540 | 1-4 | 2,270 | 0-35 | 990 | 0-87 | 1,600 | 5-33 | 9-280 |
| 7 | 2-9 | 4,490 | 3-82 | 6,140 | 1-42 | 2,300 | 0-30 | 940 | 0-8 | 1,510 | 4-8 | 8,130 |
| 8 | 2-75 | 4,250 | 3-58 | 5,660 | 1-48 | 2,370 | 0-30 | 940 | 0-75 | 1,450 | 4-75 | 8,020 |
| 9 | 2-63 | 4,060 | 3-35 | 5,250 | 1-4 | 2,270 | 0-30 | 940 | 0-62 | 1,290 | 7-15 | 13,800 |
| 10 | 2-58 | 3,990 | 3-2 | 4,990 | 1-4 | 2,270 | 0-25 | 890 | 0-52 | 1,180 | 8-57 | 17,600 |
| 11 | 2-58 | 3,990 | 3-13 | 4,870 | 1-48 | 2,370 | 0-25 | 890 | 0-5 | 1,160 | 8-55 | 17,600 |
| 12 | 2-68 | 4,150 | 3-08 | 4,790 | 1-45 | 2,340 | 0-25 | 890 | 0-6 | 1,270 | 7-62 | 15,000 |
| 13 | 2-92 | 4,520 | 3-08 | 4,790 | 1-4 | 2,270 | 0-25 | 890 | 2-25 | 3,480 | 6-83 | 13,000 |
| 14 | 3-2 | 4,990 | 3-22 | 5,030 | 1-4 | 2,270 | 0-25 | 890 | 5-5 | 9,650 | 4-82 | 8,170 |
| 15 | 3-68 | 5,860 | 3-25 | 5,070 | 1-4 | 2,270 | 0-25 | 890 | 6-98 | 13,300 | 4-37 | 7,240 |
| 16 | 4-1 | 6,700 | 3-23 | 5,050 | 1-4 | 2,270 | 0-3 | 940 | 9-17 | 19,000 | 4-07 | 6,640 |
| 17 | 4-52 | 7,540 | 3-2 | 4,990 | 1-33 | 2,180 | 0-4 | 1,050 | 9-77 | 21,000 | 3-45 | 5,420 |
| 18 | 4-72 | 7,960 | 3-13 | 4,870 | 1-23 | 2,050 | 0-7 | 1,390 | 10-02 | 21,700 | 3-0 | 4,650 |
| 19 | 4-72 | 7,960 | 3-13 | 4,870 | 1-13 | 1,910 | 1-08 | 1,850 | 9-62 | 20,600 | 2-87 | 4,440 |
| 20 | 4-57 | 7,650 | 3-12 | 4,850 | 1-08 | 1,850 | 1-4 | 2,270 | 8-93 | 18,700 | 3-1 | 4,820 |
| 21 | 4-3 | 7,100 | 3-05 | 4,740 | 1-0 | 1,750 | 1-62 | 2,570 | 8-35 | 17,000 | 3-47 | 5,450 |
| 22 | 3-92 | 6,340 | 2-85 | 4,410 | 0-95 | 1,690 | 1-8 | 2,820 | 7-4 | 14,400 | 4-22 | 6,940 |
| 23 | 3-58 | 5,660 | 2-62 | 4,040 | 0-93 | 1,660 | 1-8 | 2,820 | 6-5 | 12,100 | 5-07 | 8,700 |
| 24 | 3-15 | 4,900 | 2-35 | 3,620 | 0-9 | 1,630 | 1-73 | 2,720 | 5-6 | 9,870 | 5-9 | 10,600 |
| 25 | 3-17 | 4,930 | 2-23 | 3,450 | 0-85 | 1,570 | 1-53 | 2,440 | 5-05 | 8,660 | 7-05 | 13,500 |
| 26 | 3-22 | 5,030 | 2-12 | 3,280 | 0-83 | 1,540 | 1-37 | 2,230 | 4-45 | 7,400 | 8-32 | 17,000 |
| 27 | 3-30 | 5,160 | 2-02 | 3,130 | 0-8 | 1,510 | 1-3 | 2,140 | 3-65 | 5,800 | 8-37 | 17,100 |
| 28 | 3-30 | 5,160 | 1-93 | 3,000 | 0-75 | 1,450 | 1-25 | 2,080 | 3-38 | 5,300 | 7-92 | 15,900 |
| 29 | 3-25 | 5,080 | 1-78 | 2,790 | 0-72 | 1,420 | 1-3 | 2,140 | 2-9 | 4,490 | 7-12 | 13,700 |
| 30 | 3-28 | 5,130 | 1-65 | 2,610 | 0-7 | 1,390 | 1-35 | 2,200 | 2-82 | 4,360 | 6-22 | 11,400 |
| 31 | | | 1-53 | 2,440 | 0-63 | 1,300 | | | 3-6 | 5,700 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Campbell River at Campbell Lake,
for 1914—*Con.*

| DAY. | December. | |
|---------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1..... | 5.45 | 9,540 |
| 2..... | 4.82 | 8,170 |
| 3..... | 4.35 | 7,200 |
| 4..... | 3.87 | 6,240 |
| 5..... | 3.15 | 4,910 |
| 6..... | 2.75 | 4,250 |
| 7..... | 2.55 | 3,930 |
| 8..... | 2.35 | 3,620 |
| 9..... | 2.17 | 3,350 |
| 10..... | 1.95 | 3,030 |
| 11..... | 1.7 | 2,680 |
| 12..... | 1.5 | 2,400 |
| 13..... | 1.22 | 2,040 |
| 14..... | 1.3 | 2,140 |
| 15..... | 1.0 | 1,750 |
| 16..... | 0.9 | 1,630 |
| 17..... | 0.82 | 1,530 |
| 18..... | 0.73 | 1,430 |
| 19..... | 0.62 | 1,290 |
| 20..... | 0.55 | 1,210 |
| 21..... | 0.5 | 1,160 |
| 22..... | 0.45 | 1,110 |
| 23..... | 0.4 | 1,050 |
| 24..... | 0.4 | 1,050 |
| 25..... | 0.35 | 1,000 |
| 26..... | 0.35 | 1,000 |
| 27..... | 0.35 | 1,000 |
| 28..... | 0.3 | 940 |
| 29..... | 0.22 | 863 |
| 30..... | 0.27 | 910 |
| 31..... | 0.37 | 1,010 |

CHEMAINUS RIVER (1027).

Location.—Upstream side of Esquimalt and Nanaimo Railway bridge, except for low water stage.

Records Available.—Gauge readings daily, May 13 to December 31, 1914.

Drainage Area.—One hundred and twenty square miles.

Gauge.—Eighteen-foot wooden staff located on left bank 100 feet below railway bridge.

Channel.—Straight for 50 feet above and 300 feet below section; gravel and sand bed.

Discharge Measurements.—Six in 1914 covering all but high stage; one in 1911 and one in 1913 by Provincial Water Rights Branch.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 10 and 600 cubic feet per second, accuracy A. Between discharge of 600 and 2,000 cubic feet per second, accuracy B. Above discharge of 2,000 cubic feet per second accuracy C.

Co-operation.—Provincial Water Rights Branch installed gauge in 1911.

CHEMAINUS RIVER (1027).

Chemainus river rises in the mountains to the north of Cowichan lake, at an altitude of between four and five thousand feet. It is approximately 30 miles in length, and flows in an easterly direction to its mouth at the sea in Stuart channel.

The drainage area is 120 square miles. The precipitation varies from about 30 inches at mouth to 20 inches in the mountains at source. There are no lakes to control the flow of Chemainus river. The upper reaches of the drainage area are mostly solid rock, hence the stream is very flashy. This is specially noticeable in the fall when warm rains often cause the river to rise several feet in a few hours. The flow data on this stream is of particular importance in the construction of bridges to span it. The stream, being flashy, has a very low flow during most of the summer months.

In the vicinity of the lower part of Chemainus river, the soil is very rich and is practically all under cultivation. This district is especially noted for its dairy products.

DISCHARGE MEASUREMENTS of Chemainus River at E. & N. Ry. Bridge, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|------------------|---------------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 13. | C. E. Webb | 1,057 | 107 | 530 | 1.1 | 3.79 | 555 ¹ |
| July 6. | Cotton and Webb | 1,057 | 94 | 402 | 0.2 | 2.58 | 93.6 ² |
| July 6. | " | 1,057 | 41 | 37 | 2.4 | 2.58 | 88.3 ³ |
| Aug. 11. | C. P. Cotton | 1,057 | 30 | 19 | 1.4 | 2.16 | 26.2 |
| Aug. 28. | C. E. Webb | 1,057 | 31 | 16 | 1.0 | 2.03 | 16.3 |
| Nov. 26. | " | 1,933 | 122 | 711 | 2.7 | 5.20 | 1,890 |

¹Station established.²Several sections used.³Good measurement.

MONTHLY DISCHARGE of Chemainus River near mouth, for 1914.

(Drainage area, 120 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|--------------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June. | 340 | 140 | 200 | 1.67 | 1.86 | 11,900 | A |
| July. | 140 | 35 | 75 | 0.62 | 0.72 | 4,600 | A |
| August. | 35 | 15 | 25 | 0.21 | 0.24 | 1,500 | A |
| September. | 460 | 14 | 110 | 0.92 | 1.03 | 6,500 | A |
| October. | 5,850 | 120 | 1,320 | 11.00 | 12.68 | 81,200 | C |
| November. | 4,560 | 520 | 2,200 | 18.33 | 20.45 | 131,000 | C |
| December. | 1,760 | 190 | 435 | 3.62 | 4.17 | 26,700 | B |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Chemainus River near mouth, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | October. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | | 3-2 | 260 | 2-78 | 140 | 2-25 | 35 | 2-05 | 15 | 3-00 | 190 |
| 2. | | | 3-26 | 280 | 2-75 | 130 | 2-24 | 34 | 2-05 | 15 | 3-38 | 330 |
| 3. | | | 3-1 | 220 | 2-72 | 120 | 2-22 | 32 | 2-04 | 14 | 3-2 | 290 |
| 4. | | | 3-1 | 220 | 2-69 | 120 | 2-20 | 30 | 2-04 | 14 | 3-1 | 220 |
| 5. | | | 2-93 | 170 | 2-66 | 110 | 2-2 | 30 | 2-04 | 14 | 2-9 | 160 |
| 6. | | | 2-99 | 190 | 2-6 | 100 | 2-2 | 30 | 2-04 | 14 | 2-88 | 160 |
| 7. | | | 3-2 | 260 | 2-6 | 100 | 2-2 | 30 | 2-08 | 18 | 2-83 | 150 |
| 8. | | | 3-36 | 320 | 2-58 | 100 | 2-2 | 20 | 2-16 | 26 | 2-7 | 120 |
| 9. | | | 3-3 | 300 | 2-55 | 90 | 2-2 | 30 | 2-28 | 38 | | 140 |
| 10. | | | 3-4 | 340 | 2-55 | 90 | 2-19 | 29 | 2-23 | 33 | 2-9 | 160 |
| 11. | | | 3-25 | 280 | 2-53 | 90 | 2-19 | 29 | 2-24 | 34 | 2-86 | 150 |
| 12. | | | 3-25 | 280 | 2-5 | 80 | 2-18 | 28 | 2-23 | 33 | 4-35 | 940 |
| 13. | 3-77 | 520 | 3-2 | 260 | 2-5 | 80 | 2-18 | 28 | 2-24 | 34 | 7-65 | 5,050 |
| 14. | 3-82 | 550 | 3-13 | 230 | 2-51 | 80 | 2-17 | 27 | 2-25 | 35 | 5-55 | 2,320 |
| 15. | 3-8 | 540 | 2-9 | 160 | 2-5 | 80 | 2-17 | 27 | 2-28 | 38 | 4-75 | 1,340 |
| 16. | 3-62 | 440 | 2-8 | 140 | 2-5 | 90 | 2-16 | 26 | 2-27 | 37 | 5-47 | 2,200 |
| 17. | 3-48 | 370 | 2-9 | 160 | 2-44 | 70 | 2-16 | 26 | 2-29 | 39 | 7-17 | 4,330 |
| 18. | 3-46 | 360 | 2-85 | 150 | 2-43 | 70 | 2-15 | 25 | 3-66 | 460 | 7-99 | 5,510 |
| 19. | 3-41 | 340 | 2-82 | 140 | | 70 | 2-13 | 23 | 3-33 | 310 | 8-25 | 5,850 |
| 20. | 3-45 | 360 | 2-84 | 150 | 2-41 | 60 | 2-13 | 23 | 3-3 | 300 | 6-25 | 3,220 |
| 21. | 3-52 | 390 | 2-9 | 160 | 2-4 | 60 | 2-12 | 22 | 3-05 | 205 | 5-23 | 1,920 |
| 22. | 3-57 | 410 | 2-85 | 150 | 2-38 | 60 | 2-1 | 20 | 2-93 | 170 | 4-62 | 1,200 |
| 23. | 3-57 | 400 | 2-87 | 150 | 2-35 | 50 | 2-1 | 20 | 2-8 | 140 | 4-3 | 900 |
| 24. | 3-5 | 380 | 2-85 | 150 | 2-34 | 50 | 2-1 | 20 | 2-72 | 124 | 4-1 | 740 |
| 25. | 3-4 | 340 | 3-0 | 190 | 2-34 | 50 | 2-09 | 19 | 2-63 | 110 | 3-83 | 560 |
| 26. | 3-45 | 360 | | 180 | 2-33 | 50 | 2-08 | 18 | 2-65 | 100 | 3-6 | 430 |
| 27. | 3-45 | 360 | 2-9 | 160 | 2-32 | 40 | 2-08 | 18 | 2-9 | 160 | 3-49 | 380 |
| 28. | 3-35 | 320 | 2-87 | 150 | 2-3 | 40 | 2-07 | 17 | 3-25 | 280 | 3-38 | 330 |
| 29. | 3-15 | 240 | 2-8 | 140 | 2-3 | 40 | 2-06 | 16 | 3-12 | 230 | 3-3 | 300 |
| 30. | 3-1 | 220 | 2-79 | 140 | 2-28 | 40 | 2-05 | 15 | 3-03 | 200 | 3-6 | 430 |
| 31. | 3-15 | 240 | | | 2-26 | 35 | 2-05 | 15 | | | 4-49 | 1,070 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Chemainus River near mouth, for 1914
—Con.

| Day. | November. | | December. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 7-28 | 4,560 | 5-10 | 1,760 |
| 2..... | 6-95 | 4,130 | 4-76 | 1,360 |
| 3..... | | 4,060 | 4-54 | 1,120 |
| 4..... | 6-80 | 3,940 | 4-33 | 920 |
| 5..... | 5-4 | 2,120 | 4-1 | 740 |
| 6..... | 5-1 | 1,760 | 3-94 | 620 |
| 7..... | 5-9 | 2,760 | 3-8 | 540 |
| 8..... | 5-65 | 2,450 | 3-76 | 520 |
| 9..... | 5-45 | 2,190 | 3-72 | 490 |
| 10..... | 5-0 | 1,640 | | 440 |
| 11..... | 5-82 | 2,660 | 3-5 | 380 |
| 12..... | 5-0 | 1,640 | 3-44 | 360 |
| 13..... | 4-8 | 1,400 | 3-4 | 340 |
| 14..... | 4-55 | 1,130 | 3-33 | 310 |
| 15..... | 4-3 | 900 | 3-28 | 290 |
| 16..... | 4-03 | 680 | 3-18 | 250 |
| 17..... | 3-8 | 540 | 3-1 | 220 |
| 18..... | 3-76 | 320 | 3-0 | 190 |
| 19..... | 4-08 | 720 | 3-0 | 190 |
| 20..... | 6-1 | 3,020 | 3-0 | 190 |
| 21..... | 5-6 | 2,380 | 3-0 | 190 |
| 22..... | 5-2 | 1,880 | 3-0 | 190 |
| 23..... | 6-8 | 3,940 | 3-0 | 190 |
| 24..... | 7-06 | 4,270 | 3-0 | 190 |
| 25..... | 5-98 | 2,880 | 3-0 | 190 |
| 26..... | 5-3 | 2,000 | 3-0 | 190 |
| 27..... | 5-07 | 1,720 | 3-0 | 190 |
| 28..... | 4-85 | 1,460 | 3-0 | 190 |
| 29..... | 4-64 | 1,220 | 3-0 | 190 |
| 30..... | 4-7 | 1,280 | 3-05 | 200 |
| 31..... | | | 3-42 | 350 |

COWICHAN RIVER (1054).

Location.—Near outlet from Cowichan lake, 1,000 feet below Canadian Northern Pacific Railway bridge.

Records Available.—Gauge readings twice daily, January 31, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to December 31, 1914.

Drainage Area.—Two hundred and thirty-five square miles.

Gauge.—Twelve-foot wooden staff, nailed to sixth bent on left down stream side of highway bridge.

Channel.—Gravel and small boulder bed, channel straight 300 feet above and 100 feet below section, one channel at all stages.

Discharge Measurements.—Four in 1914, covering all but highest stage; five in 1913, by Provincial Water Rights Branch.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 40 and 1,200 cubic feet per second, accuracy A. Above discharge of 1,200 cubic feet per second, accuracy B.

Co-operation.—Provincial Water Rights Branch established station in 1913.

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COWICHAN RIVER (1054).

Cowichan river rises in Cowichan lake at an altitude of 550 feet. It flows in an easterly direction for 20 miles to the sea in Cowichan bay. The drainage area of Cowichan river is 235 square miles above the metering section, which is located near the outlet from lake. Cowichan lake covers an area of 24 square miles, and is fed by many mountain streams. The precipitation is between 60 and 80 inches.

There are falls on this stream about 10 miles from its mouth from which a fair sized development might be obtained, but in 1914 the river was reserved by the Provincial Government for the preservation of the fish. Near Cowichan lake the Government has a fish hatchery which has been most successful in stocking the river with trout.

The timber in this drainage is exceptionally fine.

The Esquimalt and Nanaimo Railway have a branch line to Cowichan lake from Duncan and the Canadian Northern railway is under construction around the lake. Timber at present is towed by tugs to the railway from different parts of the lake.

DISCHARGE MEASUREMENTS of Cowichan River near Cowichan Lake, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|--------------------|-----------|--------|------------------|----------------|---------------|------------------|
| 1914. | | | Feet. | | | | |
| June 24..... | Cotton & Webb..... | 1057 | 183 | 824 | 0.8 | 2.08 | 667 ¹ |
| Aug. 26..... | C. E. Webb..... | 1057 | 176 | 533 | 0.2 | 0.70 | 117 |
| Aug. 27..... | do..... | 1057 | 84 | 104 | 1.1 | 0.72 | 113 ² |
| Nov. 25..... | do..... | 1933 | 198 | 1,670 | 2.6 | 6.20 | 4,300 |

¹Station established.

²Low-water section.

MONTHLY DISCHARGE of Cowichan River at Cowichan lake, for 1914.

(Drainage area, 235 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January | 10,000 | 2,150 | 5,700 | 24.20 | 27.90 | 350,000 | B |
| February | 3,680 | 1,540 | 2,130 | 9.06 | 9.43 | 118,000 | B |
| March | 4,160 | 2,330 | 3,400 | 14.50 | 16.70 | 210,000 | B |
| April | 3,270 | 2,150 | 2,630 | 11.20 | 12.50 | 157,000 | B |
| May | 2,060 | 900 | 1,390 | 5.92 | 6.83 | 85,500 | B |
| June | 900 | 600 | 755 | 3.21 | 3.58 | 44,900 | A |
| July | 600 | 240 | 415 | 1.77 | 2.04 | 25,500 | A |
| August | 240 | 70 | 150 | 0.64 | 0.74 | 9,220 | A |
| September | 400 | 50 | 175 | 0.74 | 0.83 | 10,400 | A |
| October | 7,170 | 400 | 2,900 | 12.30 | 14.20 | 178,000 | B |
| November | 6,300 | 3,800 | 4,960 | 20.85 | 23.30 | 292,000 | B |
| December | 4,160 | 1,080 | 2,230 | 9.50 | 10.95 | 137,000 | B |
| The year | 10,000 | 50 | 2,230 | 9.50 | 129.00 | 1,617,520 | B |

DAILY GAUGE HEIGHT AND DISCHARGE of Cowichan River at Cowichan lake for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 4-2 | 2,150 | 5-7 | 3,680 | 5-45 | 3,380 | 4-3 | 2,240 | 4-1 | 2,060 | 2-5 | 900 |
| 2. | 4-7 | 2,600 | 5-4 | 3,330 | 5-85 | 3,860 | 4-2 | 2,150 | 4-05 | 2,020 | 2-5 | 900 |
| 3. | 5-1 | 3,000 | 5-15 | 3,050 | 6-05 | 4,100 | 4-2 | 2,150 | 4-0 | 1,980 | 2-45 | 870 |
| 4. | 6-2 | 4,200 | 4-85 | 2,750 | 6-1 | 4,160 | 4-4 | 2,330 | 3-9 | 1,900 | 2-45 | 870 |
| 5. | 7-5 | 6,080 | 4-7 | 2,600 | 6-0 | 4,040 | 4-6 | 2,510 | 3-8 | 1,820 | 2-4 | 840 |
| 6. | 9-8 | 9,600 | 4-55 | 2,460 | 5-85 | 3,860 | 4-65 | 2,960 | 3-7 | 1,740 | 2-35 | 810 |
| 7. | 10-0 | 10,000 | 4-4 | 2,330 | 5-7 | 3,680 | 4-6 | 2,510 | 3-6 | 1,660 | 2-45 | 870 |
| 8. | 9-7 | 9,500 | 4-3 | 2,240 | 5-6 | 3,560 | 4-55 | 2,460 | ..... | -1,660 | 2-45 | 870 |
| 9. | 9-5 | 9,100 | 4-15 | 2,100 | 5-4 | 3,330 | 4-5 | 2,420 | ..... | 1,550 | 2-45 | 870 |
| 10. | 9-2 | 8,700 | 3-95 | 1,940 | 5-2 | 3,110 | 4-45 | 2,370 | 3-45 | 1,530 | 2-4 | 840 |
| 11. | 9-0 | 8,400 | 3-8 | 1,820 | 5-1 | 3,000 | 4-4 | 2,330 | 3-4 | 1,500 | 2-35 | 810 |
| 12. | 8-7 | 7,950 | 3-75 | 1,780 | 5-0 | 2,900 | 4-35 | 2,280 | 3-3 | 1,430 | 2-35 | 810 |
| 13. | 8-4 | 7,480 | 3-7 | 1,740 | 5-2 | 3,110 | 4-45 | 2,370 | 3-25 | 1,400 | 2-3 | 780 |
| 14. | 8-1 | 7,000 | 3-75 | 1,780 | 5-75 | 3,740 | 4-75 | 2,650 | 3-2 | 1,360 | 2-3 | 780 |
| 15. | 8-0 | 6,860 | 3-7 | 1,740 | 5-85 | 3,860 | 5-0 | 2,900 | 3-6 | 1,660 | 2-3 | 780 |
| 16. | 7-7 | 6,380 | 3-65 | 1,700 | 5-95 | 3,980 | 5-2 | 3,110 | 3-5 | 1,580 | 2-25 | 750 |
| 17. | 7-45 | 6,000 | 3-6 | 1,660 | 5-9 | 3,920 | 5-2 | 3,110 | 3-05 | 1,250 | 2-25 | 750 |
| 18. | 7-2 | 5,640 | 3-55 | 1,620 | 5-85 | 3,860 | 5-25 | 3,160 | 3-0 | 1,220 | 2-2 | 720 |
| 19. | 7-05 | 5,430 | 3-5 | 1,580 | 5-75 | 3,740 | 5-35 | 3,270 | 2-9 | 1,150 | 2-15 | 700 |
| 20. | 6-9 | 5,220 | 3-45 | 1,540 | 5-7 | 3,680 | 5-4 | 3,330 | 2-85 | 1,120 | 2-1 | 670 |
| 21. | 6-6 | 4,810 | 3-6 | 1,660 | 5-65 | 3,620 | 5-3 | 3,220 | 2-8 | 1,080 | 2-15 | 700 |
| 22. | 6-3 | 4,420 | 3-6 | 1,660 | 5-55 | 3,500 | 5-2 | 3,110 | 3-15 | 1,320 | 2-1 | 670 |
| 23. | 6-15 | 4,230 | 3-75 | 1,780 | 5-45 | 3,350 | 5-0 | 2,900 | 3-1 | 1,290 | 2-1 | 670 |
| 24. | 5-8 | 3,800 | 3-9 | 1,900 | 5-35 | 3,270 | 4-9 | 2,800 | 2-65 | 990 | 2-1 | 670 |
| 25. | 5-7 | 3,680 | 4-05 | 2,020 | 5-15 | 3,050 | 4-8 | 2,700 | 2-7 | 1,020 | 2-05 | 650 |
| 26. | 5-9 | 3,920 | 4-1 | 2,060 | 5-0 | 2,900 | 4-6 | 2,510 | 2-7 | 1,020 | 2-05 | 650 |
| 27. | 6-0 | 4,040 | 4-6 | 2,510 | 4-85 | 2,750 | 4-55 | 2,460 | 2-7 | 1,020 | 2-05 | 650 |
| 28. | 5-8 | 3,800 | 4-8 | 2,700 | 4-7 | 2,600 | 4-4 | 2,330 | 2-65 | 990 | 2-0 | 620 |
| 29. | 5-85 | 3,860 | | | 4-6 | 2,510 | 4-3 | 2,240 | 2-6 | 960 | 2-0 | 620 |
| 30. | 6-35 | 4,485 | | | 4-5 | 2,420 | 4-2 | 2,150 | 2-55 | 930 | 1-95 | 600 |
| 31. | 6-1 | 4,160 | | | 4-4 | 2,330 | | | 2-5 | 900 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Cowichan River at Cowichan lake,
for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.95 | 600 | 1.1 | 240 | 0.60 | 60 | 1.5 | 400 | 6.2 | 4,290 | 6.1 | 4,160 |
| 2 | 1.95 | 600 | 1.05 | 220 | 0.60 | 60 | 1.6 | 440 | 6.8 | 5,080 | 5.9 | 3,920 |
| 3 | 1.9 | 570 | 1.05 | 220 | 0.60 | 60 | 1.6 | 440 | 7.2 | 5,640 | 5.7 | 3,680 |
| 4 | 1.9 | 570 | 1.0 | 200 | 0.60 | 60 | 1.6 | 440 | 7.65 | 6,300 | 5.5 | 3,440 |
| 5 | 1.83 | 530 | 1.0 | 200 | 0.60 | 60 | 1.6 | 440 | 7.65 | 6,300 | 5.3 | 3,220 |
| 6 | 1.8 | 520 | 1.0 | 200 | 0.55 | 50 | 1.6 | 440 | 7.5 | 6,080 | 5.3 | 3,220 |
| 7 | 1.8 | 520 | 1.0 | 200 | 0.55 | 50 | 1.6 | 440 | 7.4 | 5,930 | 5.2 | 3,110 |
| 8 | 1.75 | 500 | 1.0 | 200 | 0.6 | 60 | 1.6 | 440 | 7.35 | 5,850 | 5.0 | 2,900 |
| 9 | 1.75 | 500 | 1.0 | 200 | 0.6 | 60 | 1.6 | 440 | 7.45 | 6,000 | 4.9 | 2,800 |
| 10 | 1.7 | 480 | 0.98 | 190 | 0.6 | 60 | 1.6 | 440 | 7.4 | 5,930 | 4.8 | 2,700 |
| 11 | 1.67 | 470 | 0.95 | 180 | 0.6 | 60 | 1.6 | 440 | 7.4 | 5,930 | 4.7 | 2,600 |
| 12 | 1.65 | 460 | 0.95 | 180 | 0.6 | 60 | 1.75 | 500 | 7.4 | 5,930 | 4.7 | 2,600 |
| 13 | 1.6 | 440 | 0.9 | 160 | 0.6 | 60 | 3.60 | 1,660 | 7.05 | 5,430 | 4.6 | 2,500 |
| 14 | 1.6 | 440 | 0.9 | 160 | 0.6 | 60 | 4.3 | 2,240 | 6.8 | 5,080 | 4.5 | 2,420 |
| 15 | 1.55 | 420 | 0.9 | 160 | 0.62 | 65 | 4.65 | 2,560 | 6.5 | 4,680 | 4.3 | 2,240 |
| 16 | 1.5 | 400 | 0.9 | 160 | 0.8 | 120 | 4.9 | 2,800 | 6.25 | 4,350 | 4.1 | 2,060 |
| 17 | 1.5 | 400 | 0.85 | 140 | 1.0 | 200 | 5.7 | 3,680 | 6.2 | 4,290 | 4.0 | 1,980 |
| 18 | 1.45 | 380 | 0.85 | 140 | 1.10 | 240 | 6.6 | 4,800 | 6.0 | 4,040 | 3.9 | 1,900 |
| 19 | 1.45 | 380 | 0.85 | 140 | 1.2 | 280 | 7.65 | 6,300 | 5.8 | 3,800 | 3.8 | 1,820 |
| 20 | 1.4 | 360 | 0.85 | 140 | 1.3 | 320 | 8.2 | 7,170 | 6.0 | 4,040 | 3.6 | 1,660 |
| 21 | 1.4 | 360 | 0.8 | 120 | 1.25 | 300 | 8.05 | 6,940 | 6.0 | 4,040 | 3.5 | 1,580 |
| 22 | 1.35 | 340 | 0.8 | 120 | 1.2 | 280 | 7.85 | 6,620 | 6.1 | 4,160 | 3.4 | 1,500 |
| 23 | 1.35 | 340 | 0.8 | 120 | 1.2 | 280 | 7.4 | 5,930 | 6.1 | 4,160 | 3.3 | 1,430 |
| 24 | 1.3 | 320 | 0.75 | 100 | 1.2 | 280 | 7.3 | 5,780 | 6.0 | 4,040 | 3.3 | 1,430 |
| 25 | 1.3 | 320 | 0.75 | 100 | 1.2 | 280 | 6.8 | 5,080 | 6.2 | 4,290 | 3.2 | 1,360 |
| 26 | 1.25 | 300 | 0.7 | 80 | 1.2 | 280 | 6.15 | 4,220 | 6.2 | 4,290 | 3.1 | 1,290 |
| 27 | 1.25 | 300 | 0.7 | 80 | 1.3 | 320 | 5.85 | 3,860 | 6.2 | 4,290 | 3.0 | 1,220 |
| 28 | 1.2 | 280 | 0.7 | 80 | 1.4 | 360 | 5.7 | 3,680 | 6.2 | 4,290 | 2.9 | 1,150 |
| 29 | 1.15 | 260 | 0.65 | 70 | 1.5 | 400 | 5.6 | 3,560 | 6.2 | 4,290 | 2.8 | 1,080 |
| 30 | 1.15 | 260 | 0.65 | 70 | 1.5 | 400 | 5.7 | 3,680 | 6.2 | 4,290 | 2.9 | 1,150 |
| 31 | 1.1 | 240 | 0.65 | 70 | | | 5.95 | 3,980 | | | 2.8 | 1,080 |

ENGLISHMAN RIVER (1030).

Location.—One-half mile from mouth ; 1,000 feet upstream from Island Highway bridge; 2 miles from Parksville.

Records available.—Gauge readings daily; February 15, 1913, to December 31, 1913, Provincial Water Rights Branch; May 19, 1914, to September 21, 1914; December 9, 1914, to December 31, 1914.

Drainage area.—One hundred and eleven square miles.

Gauge.—Twelve feet of enamel staff, in two 6 foot lengths, located on right bank, 100 feet upstream from measuring section.

Channel.—Even gravel bed, channel straight for 500 feet above and below section, one channel at all stages.

Discharge measurements.—Five in 1914, covering low and medium stages; four in 1913, Provincial Water Rights Branch.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 20 and 100 cubic feet per second, accuracy B. Above discharge of 400 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch established station in 1913.

ENGLISHMAN RIVER (1030).

Englishman river is approximately 20 miles in length. It rises in the mountains at an elevation of some 5,000 feet, and flows in an easterly direction to its mouth in the straits of Georgia near the town of Parksville. The precipitation varies from about 30 inches at mouth to 60 inches in mountains. Having no natural storage, this stream is very flashy. During the summer months the flow is generally small. If artificial storage could be obtained at a reasonable expense, a small development might be made at falls.

The Giant Powder Co., which is located at Powder point, a short distance from the mouth of Englishman river, made surveys in 1912 and 1913 in view of developing power for their works, but gave up the project.

The Esquimalt and Nanaimo railway and the Government highway both cross this stream near its mouth. The district has many settlers, several of whom obtain their domestic supply from the river. The town of Parksville is on the Government highway about 2 miles distant.

The gauging station on Englishman river is located about one-half mile from mouth.

DISCHARGE MEASUREMENT of Englishman River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 19 | Cotton & Webb..... | 1057 | 129 | 160 | 1.9 | 2.50 | 304 ¹ |
| July 19 | do | 1057 | 110 | 156 | 0.8 | 2.00 | 127 ² |
| Aug. 29 | C. E. Webb..... | 1057 | 26 | 16 | 1.5 | 1.47 | 21.0 ³ |
| Aug. 29 | do | 1057 | 106 | 110 | 0.2 | 1.47 | 19.6 |
| Dec. 10 | do | 1933 | 114 | 227 | 1.2 | 2.50 | 266 |

¹ Station established.

² Cable carrier established.

³ Low water section.

MONTHLY DISCHARGE of Englishman River at mouth, for 1914.

(Drainage area, 111 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June..... | 320 | 220 | 254 | 2.29 | 2.56 | 5,100 | B |
| July..... | 220 | 48 | 103 | 0.93 | 1.07 | 6,330 | B |
| August..... | 48 | 13 | 37 | 0.33 | 0.38 | 2,280 | B |

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DAILY GAUGE HEIGHT AND DISCHARGE of Englishman River near mouth, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | December | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 2-3 | 220 | 2-3 | 220 | 1-6 | 48 | 1-4 | 13 | | |
| 2 | | | 2-4 | 250 | 2-3 | 220 | 1-6 | 48 | 1-4 | 13 | | |
| 3 | | | 2-4 | 250 | 2-2 | 190 | 1-6 | 48 | 1-4 | 13 | | |
| 4 | | | 2-5 | 280 | 2-2 | 190 | 1-6 | 48 | 1-3 | 5 | | |
| 5 | | | 2-5 | 280 | 2-1 | 160 | 1-6 | 48 | 1-3 | 5 | | |
| 6 | | | 2-4 | 250 | 2-0 | 130 | 1-6 | 48 | 1-3 | 5 | | |
| 7 | | | 2-4 | 250 | 2-0 | 130 | 1-6 | 48 | 1-3 | 5 | | |
| 8 | | | 2-5 | 280 | 2-0 | 130 | 1-6 | 48 | 1-3 | 5 | | |
| 9 | | | 2-5 | 280 | 2-0 | 130 | 1-6 | 48 | 1-3 | 5 | 2-6 | 320 |
| 10 | | | 2-4 | 250 | 1-9 | 108 | 1-6 | 48 | 1-5 | 28 | 2-5 | 280 |
| 11 | | | 2-3 | 220 | 1-9 | 108 | 1-6 | 48 | 1-5 | 28 | 2-4 | 250 |
| 12 | | | 2-3 | 220 | 1-9 | 108 | 1-6 | 48 | 1-5 | 28 | 2-35 | 235 |
| 13 | | | 2-3 | 220 | 1-9 | 108 | 1-6 | 48 | 1-6 | 48 | 2-3 | 220 |
| 14 | | | 2-5 | 280 | 1-9 | 108 | 1-6 | 48 | 1-7 | 68 | 2-25 | 205 |
| 15 | | | 2-6 | 320 | 1-8 | 88 | 11-5 | 28 | 1-7 | 68 | 2-2 | 190 |
| 16 | | | 2-5 | 280 | 1-8 | 88 | 1-5 | 28 | 1-7 | 68 | 2-15 | 175 |
| 17 | | | 2-5 | 280 | 1-8 | 88 | 1-5 | 28 | 1-7 | 68 | 2-15 | 175 |
| 18 | | | 2-5 | 280 | 1-8 | 88 | 1-5 | 28 | 1-9 | 108 | 2-2 | 190 |
| 19 | 2-5 | 280 | 2-5 | 280 | 1-75 | 78 | 1-5 | 28 | 3-1 | 530 | 2-15 | 175 |
| 20 | 2-6 | 320 | 2-5 | 280 | 1-75 | 78 | 1-5 | 28 | 2-11 | 165 | 2-1 | 160 |
| 21 | 2-7 | 360 | 2-5 | 280 | 1-7 | 68 | 1-5 | 28 | 2-1 | 160 | 2-1 | 160 |
| 22 | 2-8 | 400 | 2-4 | 250 | 1-7 | 68 | 1-5 | 28 | | | 2-1 | 160 |
| 23 | 2-8 | 400 | 2-4 | 250 | 1-7 | 68 | 1-5 | 28 | | | 2-05 | 145 |
| 24 | 2-9 | 440 | 2-4 | 250 | 1-7 | 68 | 1-5 | 28 | | | 2-05 | 145 |
| 25 | 2-6 | 320 | 2-4 | 250 | 1-7 | 68 | 1-5 | 28 | | | 2-05 | 145 |
| 26 | 2-6 | 320 | 2-3 | 220 | 1-7 | 68 | 1-5 | 28 | | | 2-1 | 160 |
| 27 | 2-6 | 320 | 2-3 | 220 | 1-6 | 48 | 1-5 | 28 | | | 2-1 | 160 |
| 28 | 2-5 | 280 | 2-3 | 220 | 1-6 | 48 | 1-6 | 48 | | | 2-15 | 175 |
| 29 | 2-2 | 190 | 2-3 | 220 | 1-6 | 48 | 1-4 | 13 | | | 2-15 | 175 |
| 30 | 2-2 | 190 | 2-3 | 220 | 1-6 | 48 | 1-4 | 13 | | | 2-5 | 280 |
| 31 | 2-3 | 220 | | | 1-6 | 48 | 1-6 | 48 | | | 2-6 | 320 |

HASLAM CREEK (1029).

Location.—Low-water section, 500 feet below Canadian Collieries railway bridge; 6 miles from Ladysmith.

High-water section, downstream side of bridge.

Records available.—Gauge readings twice a week. July 3, 1914, to December 31, 1914.

Drainage area.—Twenty-seven square miles.

Gauge.—Six-foot enamel staff, on piling of railway bridge, downstream side near left bank.

Channel.—Low-water section, gravel bed, channel straight 50 feet above and below section, banks overflow in extreme high water.

High-water section, stream flows at small angle to bridge, bed of stream is gravel.

Discharge measurements.—Four in 1914, covering all but high stage; one in 1913, Provincial Water Rights Branch.

Winter flow.—Open all year.

Accuracy.—Between discharge of 0 and 160 cubic feet per second, accuracy B. Above discharge of 160 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch installed gauge in 1913.

HASLAM CREEK (1029).

Haslam creek is part of the Nanaimo river drainage. It rises in the mountains between the Chemainus and Nanaimo rivers at an elevation of about 4,000 feet. The metering section is located at the Canadian Collieries railway bridge, about 2 miles above mouth of creek. The drainage area, above metering section, is 27 square miles. A large part of the drainage area is covered with second-growth timber.

The precipitation varies from 30 to 50 inches, being most in the higher altitudes. The stream has no natural storage and is flashy.

This stream is of little importance at present, except in effect of the total flow of Nanaimo river which it enters about 4 miles from the sea.

DISCHARGE MEASUREMENTS of Haslam Creek near Canadian Collieries railway bridge, for 1914.

| Date. | Hydrographer. | Meter. No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------|------------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914 | | | | | | | |
| May 14 | C. E. Webb | 1057 | 58 | 89 | 0.9 | 1.30 | 83.58 |
| July 7 | Cotton & Webb | 1057 | 60 | 58 | 0.2 | 0.47 | 13.30 |
| Aug. 10 | C. P. Cotton | 1057 | 62 | 43 | 0.1 | 0.20 | 4.70 |
| Nov. 27 | C. E. Webb | 1933 | 170 | 238 | 2.1 | 2.20 | 473.00 |

MONTHLY DISCHARGE of Haslam Creek near mouth, for 1914.

(Drainage area, 27 square miles.).

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June | 68 | 24 | 47 | 1.74 | 1.94 | 2,800 | B |
| July | 22 | 4 | 10 | 0.37 | 0.43 | 610 | B |
| August | 4 | 3 | 4 | 0.15 | 0.17 | 250 | B |
| September | 50 | 3 | 16 | 0.59 | 0.66 | 950 | B |
| October | 1,360 | 18 | 357 | 13.20 | 15.20 | 22,000 | C |
| November | 1,420 | 88 | 530 | 19.60 | 28.90 | 31,500 | C |
| December | 480 | 32 | 110 | 4.08 | 4.70 | 6,760 | C |

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DAILY GAUGE HEIGHT AND DISCHARGE of Haslam Creek near mouth, for 1914.

| DAY. | May. | | June. | |
|------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | 68 |
| 2 | | | | 66 |
| 3 | | | | 63 |
| 4 | | | 1-1 | 60 |
| 5 | | | | 60 |
| 6 | | | | 60 |
| 7 | | | | 60 |
| 8 | | | | 60 |
| 9 | | | 1-1 | 60 |
| 10 | | | | 60 |
| 11 | | | | 60 |
| 12 | | | | 60 |
| 13 | | | | 60 |
| 14 | | | | 60 |
| 15 | 1-3 | 88 | 1-1 | 60 |
| 16 | 1-3 | 88 | | 54 |
| 17 | | 88 | | 48 |
| 18 | 1-3 | 88 | 0-9 | 40 |
| 19 | | 84 | | 38 |
| 20 | | 78 | | 37 |
| 21 | 1-2 | 72 | | 35 |
| 22 | | 72 | | 33 |
| 23 | | 72 | 0-8 | 32 |
| 24 | | 72 | | 31 |
| 25 | | 72 | | 28 |
| 26 | 1-2 | 72 | | 26 |
| 27 | | 72 | 0-7 | 24 |
| 28 | | 72 | | 24 |
| 29 | | 72 | | 24 |
| 30 | 1-2 | 72 | 0-7 | 24 |
| 31 | | 72 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Haslam Creek near mouth, for 1914
—Con.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec. ft. | Feet. | Sec. ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 22 | | 4 | | 3 | | 48 | | 800 | | 480 |
| 2 | | 20 | | 4 | | 3 | 1-1 | 60 | 3-8 | 1,420 | 2-2 | 480 |
| 3 | 0-6 | 18 | 0-2 | 4 | | 3 | | 50 | | 1,000 | | 400 |
| 4 | | 17 | | 4 | | 3 | 0-9 | 40 | | 800 | 1-9 | 300 |
| 5 | | 16 | 0-2 | 4 | 0-1 | 3 | | 36 | 2-4 | 600 | | 220 |
| 6 | | 15 | | 4 | | 3 | | 30 | | 560 | | 160 |
| 7 | 0-5 | 14 | 0-2 | 4 | 0-1 | 3 | 0-7 | 24 | | 520 | | 120 |
| 8 | | 12 | | 4 | | 3 | | 22 | | 480 | 1-3 | 88 |
| 9 | 0-4 | 10 | | 4 | | 4 | | 20 | | 440 | | 82 |
| 10 | | 10 | | 4 | 0-2 | 4 | 0-6 | 18 | 2-1 | 420 | | 76 |
| 11 | 0-4 | 10 | 0-2 | 4 | | 4 | 0-6 | 18 | | 420 | 1-2 | 72 |
| 12 | | 10 | | 4 | | 4 | | 500 | 2-1 | 420 | | 68 |
| 13 | | 10 | 0-2 | 4 | | 4 | 3-3 | 1,130 | | 420 | | 64 |
| 14 | 0-4 | 10 | | 4 | | 4 | | 700 | | 300 | | 60 |
| 15 | | 10 | 0-2 | 4 | 0-2 | 4 | 1-9 | 300 | | 200 | | 55 |
| 16 | 0-4 | 10 | | 4 | | 14 | | 700 | | 100 | 1-0 | 50 |
| 17 | | 8 | | 3 | | 23 | 3-2 | 1,070 | 1-3 | 88 | | 47 |
| 18 | 0-3 | 6 | 0-1 | 3 | 0-8 | 32 | | 1,150 | | 280 | | 43 |
| 19 | | 6 | | 3 | | 41 | 3-7 | 1,360 | 2-2 | 480 | 0-9 | 40 |
| 20 | 0-3 | 6 | | 3 | 1-0 | 50 | | 1,300 | | 500 | | 40 |
| 21 | | 6 | 0-1 | 3 | | 40 | | 800 | | 600 | | 40 |
| 22 | 0-3 | 6 | | 3 | | 32 | | 400 | | 700 | 0-9 | 40 |
| 23 | | 6 | | 3 | 0-7 | 24 | | 200 | 2-7 | 770 | | 36 |
| 24 | | 6 | 0-1 | 3 | | 19 | | 150 | | 650 | 0-8 | 32 |
| 25 | 0-3 | 6 | | 3 | 0-5 | 14 | | 100 | | 550 | | 32 |
| 26 | | 6 | | 3 | | 20 | 1-2 | 72 | 2-2 | 480 | | 32 |
| 27 | 0-3 | 6 | 0-1 | 3 | | 24 | | 64 | | 480 | | 32 |
| 28 | | 5 | | 3 | | 28 | | 56 | | 480 | | 32 |
| 29 | 0-2 | 4 | 0-1 | 3 | 0-8 | 32 | 1-0 | 50 | | 480 | 0-8 | 32 |
| 30 | | 4 | | 3 | 0-8 | 32 | | 100 | | 480 | | 45 |
| 31 | 0-2 | 4 | | 3 | | | | 500 | | | 1-1 | 60 |

KOKSILAH RIVER (1026).

Location.—Two miles from mouth, upstream side of Esquimalt and Nanaimo railway bridge, 2 miles south from Duncan.

Records available.—Gauge readings daily, May 12, 1914, to December 31, 1914.

Drainage area.—One hundred and twenty-four square miles.

Gauge.—Fourteen foot staff on left bank, 600 feet above bridge.

Channel.—Gravel bed, two channels in low water, channel straight for 100 feet above section and for 300 feet below, good control.

Discharge measurements.—Six in 1914, covering all but highest stage; one in 1911 and one in 1913, by Provincial Water Rights Branch.

Winter flow.—Open all year.

Accuracy.—B.

Co-operation.—Provincial Water Rights Branch installed gauge in 1911.

KOKSILAH RIVER (1026).

Koksilah river rises in the mountains at an altitude of about 3,000 feet, and flows in an easterly direction to the sea, in Cowichan bay. It is approximately 20 miles in length, and has a drainage area of 124 square miles above

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gauging station. The gauging station is located about 2 miles from mouth. The precipitation varies from 30 inches at mouth to about 70 inches at headwaters. There is no natural storage on this stream, and hence its flow is very irregular. In the summer months the flow is small.

There are some very fine farms in this district. The town of Duncan is located about 2 miles from Koksilah river on the Esquimalt and Nanaimo railway.

DISCHARGE MEASUREMENTS of Koksilah River near E. & N. Ry. bridge,
for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|---------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 12 | C. E. Webb | 1057 | 95 | 87 | 1.3 | 1.73 | 110.0 ¹ |
| July 5 | Webb & Cotton | 1057 | 34 | 18 | 1.8 | 1.23 | 33.9 ² |
| Aug. 12 | C. P. Cottor | 1057 | 71 | 94 | 0.2 | 1.00 | 14.4 |
| " 12 | do | 1057 | 37 | 14 | 1.1 | 1.15 | 16.2 |
| " 27 | C. E. Webb | 1057 | 30 | 12 | 0.9 | 1.00 | 10.1 |
| Nov. 25 | do | 1933 | 122 | 462 | 3.6 | 4.92 | 1,650.0 |

¹ Station established.² Different sections use d.

MONTHLY DISCHARGE of Koksilah River near mouth, for 1914.

(Drainage area, 124 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June | 140 | 40 | 59 | 0.48 | 0.54 | 3,500 |
| July | 38 | 25 | 28 | 0.23 | 0.27 | 1,720 |
| August | 25 | 10 | 14 | 0.11 | 0.13 | 860 |
| September | 115 | 10 | 40 | 0.32 | 0.36 | 2,380 |
| October | 2,220 | 40 | 375 | 3.03 | 3.49 | 23,100 |
| November | 2,310 | 290 | 780 | 6.28 | 7.01 | 46,400 |
| December | 790 | 115 | 280 | 2.26 | 2.61 | 17,200 |

Accuracy "B".

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DAILY GAUGE HEIGHT AND DISCHARGE of Koksilah River near mouth, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | October. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 1.4 | 50 | 1.28 | 38 | 1.15 | 25 | 1.0 | 10 | 1.4 | 50 |
| 2..... | | | 1.4 | 50 | 1.25 | 35 | 1.15 | 25 | 1.0 | 10 | 1.4 | 50 |
| 3..... | | | 1.4 | 50 | 1.23 | 33 | 1.12 | 22 | 1.0 | 10 | 1.4 | 50 |
| 4..... | | | 1.38 | 48 | 1.23 | 33 | 1.1 | 20 | 1.0 | 10 | 1.4 | 50 |
| 5..... | | | 1.35 | 45 | 1.2 | 30 | 1.1 | 20 | 1.0 | 10 | 1.37 | 47 |
| 6..... | | | 1.32 | 42 | 1.2 | 30 | 1.08 | 18 | 1.0 | 10 | 1.35 | 45 |
| 7..... | | | 1.4 | 50 | 1.2 | 30 | 1.08 | 18 | 1.05 | 15 | 1.35 | 45 |
| 8..... | | | 1.7 | 115 | 1.2 | 30 | 1.08 | 18 | 1.1 | 20 | 1.35 | 45 |
| 9..... | | | 1.8 | 140 | 1.2 | 30 | 1.08 | 18 | 1.15 | 25 | 1.32 | 42 |
| 10..... | | | 1.7 | 115 | 1.2 | 30 | 1.05 | 15 | 1.2 | 30 | 1.3 | 40 |
| 11..... | | | 1.6 | 90 | 1.2 | 30 | 1.05 | 15 | 1.15 | 25 | 1.4 | 50 |
| 12..... | 1.7 | 115 | 1.5 | 70 | 1.2 | 30 | 1.05 | 15 | 1.1 | 20 | 1.6 | 90 |
| 13..... | 1.7 | 115 | 1.5 | 70 | 1.2 | 30 | 1.05 | 15 | 1.2 | 30 | 1.7 | 115 |
| 14..... | 1.65 | 105 | 1.5 | 70 | 1.2 | 30 | 1.05 | 15 | 1.4 | 50 | 1.9 | 165 |
| 15..... | 1.63 | 100 | 1.48 | 65 | 1.18 | 28 | 1.05 | 15 | 1.6 | 90 | 2.0 | 190 |
| 16..... | 1.6 | 90 | 1.45 | 60 | 1.15 | 25 | 1.0 | 10 | 1.7 | 115 | 2.4 | 290 |
| 17..... | 1.6 | 90 | 1.4 | 50 | 1.15 | 25 | 1.0 | 10 | 1.7 | 115 | 3.0 | 500 |
| 18..... | 1.57 | 85 | 1.4 | 50 | 1.15 | 25 | 1.0 | 10 | 1.5 | 70 | 4.0 | 1,000 |
| 19..... | 1.55 | 80 | 1.4 | 50 | 1.15 | 25 | 1.0 | 10 | 1.5 | 70 | 5.5 | 2,230 |
| 20..... | 1.52 | 75 | 1.4 | 50 | 1.15 | 25 | 1.0 | 10 | 1.45 | 60 | 4.5 | 1,320 |
| 21..... | 1.5 | 70 | 1.37 | 47 | 1.15 | 25 | 1.0 | 10 | 1.4 | 50 | 3.6 | 790 |
| 22..... | 1.45 | 60 | 1.35 | 45 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 3.0 | 500 |
| 23..... | 1.4 | 50 | 1.35 | 45 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 2.8 | 420 |
| 24..... | 1.4 | 50 | 1.35 | 45 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 2.6 | 350 |
| 25..... | 1.45 | 60 | 1.35 | 45 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 2.4 | 290 |
| 26..... | 1.5 | 70 | 1.35 | 45 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 2.4 | 290 |
| 27..... | 1.55 | 80 | 1.35 | 45 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 2.4 | 290 |
| 28..... | 1.55 | 80 | 1.32 | 42 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 2.4 | 290 |
| 29..... | 1.5 | 70 | 1.32 | 42 | 1.15 | 25 | 1.0 | 10 | 1.3 | 40 | 2.6 | 350 |
| 30..... | 1.45 | 60 | 1.3 | 40 | 1.15 | 25 | 1.0 | 10 | 1.35 | 45 | 2.7 | 380 |
| 31..... | 1.43 | 55 | | | 1.15 | 25 | 1.0 | 10 | | | 4.4 | 1,250 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Koksilah River near mouth, for 1914.
—*Con.*

| DAY. | November. | | December. | |
|------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 4.8 | 1,560 | 3.4 | 690 |
| 2 | 5.5 | 2,220 | 3.6 | 790 |
| 3 | 5.6 | 2,310 | 3.4 | 690 |
| 4 | 5.3 | 2,020 | 3.2 | 590 |
| 5 | 3.0 | 500 | 3.0 | 500 |
| 6 | 3.0 | 500 | 2.9 | 460 |
| 7 | 2.9 | 460 | 2.7 | 380 |
| 8 | 3.3 | 640 | 2.6 | 350 |
| 9 | 4.0 | 1,000 | 2.5 | 320 |
| 10 | 4.6 | 1,400 | 2.4 | 290 |
| 11 | 4.0 | 1,000 | 2.4 | 290 |
| 12 | 3.3 | 640 | 2.3 | 265 |
| 13 | 3.0 | 500 | 2.2 | 240 |
| 14 | 2.8 | 420 | 2.1 | 215 |
| 15 | 2.6 | 350 | 2.0 | 190 |
| 16 | 2.6 | 350 | 2.0 | 190 |
| 17 | 2.4 | 290 | 1.9 | 165 |
| 18 | 2.4 | 290 | 1.9 | 165 |
| 19 | 2.4 | 290 | 1.8 | 140 |
| 20 | 2.4 | 290 | 1.7 | 115 |
| 21 | 2.4 | 290 | 1.7 | 115 |
| 22 | 3.0 | 500 | 1.7 | 115 |
| 23 | 3.2 | 590 | 1.7 | 115 |
| 24 | 3.6 | 790 | 1.7 | 115 |
| 25 | 4.2 | 1,120 | 1.7 | 115 |
| 26 | 3.8 | 890 | 1.7 | 115 |
| 27 | 3.2 | 590 | 1.8 | 140 |
| 28 | 3.0 | 500 | 1.9 | 165 |
| 29 | 3.0 | 500 | 2.0 | 190 |
| 30 | 3.2 | 590 | 2.0 | 190 |
| 31 | | | 2.0 | 190 |

LITTLE QUALICUM RIVER (1031).

Location.—At outlet from Cameron lake, downstream side of highway bridge.

Records available.—Gauge readings daily, February 27, 1913, to December 31, 1913. Provincial Water Rights Branch, January 1, 1914, to December 31, 1914.

Drainage area.—Fifty-four square miles.

Gauge.—Twelve-foot wooden staff nailed to crib on shore of lake, 500 feet from head of river.

Channel.—Straight on both sides of section for 100 feet, gravel and small boulder bed, confined by bridge abutments in high water, one channel at all stages.

Discharge measurements.—Six in 1913 by Provincial Water Rights Branch, and five in 1914.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 30 and 400 cubic feet per second, accuracy

A. Below discharge of 30 and above 400 cubic feet per second, accuracy B.

Co-operation.—Station established by Provincial Water Rights Branch in 1913.

LITTLE QUALICUM RIVER (1031).

Little Qualicum river is approximately 6 miles in length. Rising in Cameron lake at an altitude of 600 feet, it flows in an easterly direction to its mouth in the strait of Georgia near Qualicum beach.

The drainage area above the metering section, which is located at the outlet from Cameron lake, is 54 square miles. The Cameron river, which flows into Cameron lake, is about 16 miles long and rises in Labour Day lake.

The precipitation varies from about 40 inches on the coast to 60 inches at the headwaters. Considerable snow falls in the mountains of this drainage.

There is a good location for a hydro-electric development on Little Qualicum river at the falls, about 3 miles below Cameron lake. At this point the river drops some 100 feet in a series of three falls into a solid rock box canyon.

Owing to the low flow during the summer months, it would be necessary to store water for that period. Cameron lake offers good storage possibilities but the grade of the government road around the south side of the lake would have to be raised, as at present it is not far above high water.

The district has been opened up considerably for settlement in the last few years. At Qualicum beach a considerable amount of capital has been invested clearing a large tract of land. A fine tourist hotel has been built near the sea. At Cameron lake the Canadian Pacific Railway Company have a delightful chalet for the accommodation of tourist traffic.

DISCHARGE MEASUREMENTS of Little Qualicum River near Cameron Lake, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|--------------------|-----------|--------|------------------|----------------|---------------|------------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 20..... | Webb & Cotton..... | 1057 | 58 | 143 | 2.4 | 2.40 | 340 ¹ |
| July 10..... | C. P. Cotton..... | 1057 | 53 | 80 | 1.9 | 1.40 | 149 |
| Sept. 1..... | C. E. Webb..... | 1057 | 46 | 33 | 1.1 | 0.49 | 35.3 |
| " 2..... | do..... | 1057 | 46 | 32 | 1.0 | 0.47 | 33.5 |
| Dec. 16..... | do..... | 1933 | 58 | 116 | 2.3 | 2.05 | 269 |

¹ Station established.

MONTHLY DISCHARGE of Little Qualicum River at Cameron Lake, for 1914.

(Drainage area, 54 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. | |
| January..... | 1,910 | 215 | 632 | 11.70 | 13.49 | 38,860 | B |
| February..... | 535 | 165 | 242 | 4.48 | 4.67 | 13,400 | A |
| March..... | 855 | 290 | 498 | 9.23 | 10.64 | 30,600 | B |
| April..... | 840 | 255 | 495 | 9.17 | 10.30 | 29,540 | B |
| May..... | 445 | 315 | 382 | 7.08 | 8.16 | 23,500 | A |
| June..... | 375 | 235 | 278 | 5.15 | 5.75 | 16,500 | A |
| July..... | 230 | 68 | 134 | 2.48 | 2.86 | 8,240 | A |
| August..... | 68 | 45 | 54 | 1.00 | 1.15 | 3,320 | A |
| September..... | 192 | 38 | 91 | 1.69 | 1.89 | 5,400 | A |
| October..... | 2,030 | 150 | 655 | 12.13 | 13.99 | 40,300 | B |
| November..... | 1,300 | 375 | 824 | 15.25 | 17.02 | 49,000 | B |
| December..... | 650 | 130 | 259 | 4.80 | 5.53 | 16,000 | B |
| The year..... | 2,030 | 38 | 379 | 7.01 | 95.45 | 274,660 | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Little Qualicum River at Cameron lake, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec. ft. | Feet. | Sec.-ft. |
| 1..... | 1-79 | 215 | 2-3 | 315 | 4-02 | 735 | 2-07 | 270 | 2-69 | 400 | 2-28 | 310 |
| 2..... | 1-88 | 230 | 2-25 | 305 | 4-41 | 855 | 2-0 | 255 | 2-84 | 430 | 2-29 | 315 |
| 3..... | 2-34 | 325 | 2-19 | 295 | 4-12 | 765 | 2-0 | 255 | 2-89 | 445 | 2-28 | 310 |
| 4..... | 4-33 | 830 | 2-11 | 275 | 3-57 | 690 | 2-15 | 285 | 2-89 | 445 | 2-3 | 315 |
| 5..... | 6-71 | 1,600 | 2-66 | 265 | 3-54 | 595 | 3-1 | 490 | 2-84 | 430 | 2-28 | 310 |
| 6..... | 7-51 | 1,910 | 1-99 | 255 | 3-20 | 510 | 3-27 | 530 | 2-61 | 375 | 2-2 | 295 |
| 7..... | 6-79 | 1,630 | 1-89 | 235 | 3-03 | 475 | 5-16 | 505 | 2-69 | 400 | 2-6 | 375 |
| 8..... | 5-75 | 1,270 | 1-82 | 220 | 2-79 | 420 | 3-0 | 470 | 2-6 | 375 | 2-16 | 285 |
| 9..... | 4-85 | 985 | 1-73 | 205 | 2-66 | 390 | 2-89 | 445 | 2-64 | 385 | 2-12 | 280 |
| 10..... | 4-26 | 810 | 1-69 | 200 | 2-56 | 365 | 2-83 | 425 | 2-62 | 380 | 2-14 | 285 |
| 11..... | 4-11 | 765 | 1-65 | 190 | 2-46 | 345 | 2-8 | 420 | 2-68 | 395 | 2-09 | 275 |
| 12..... | 4-47 | 870 | 1-59 | 155 | 2-4 | 335 | 2-8 | 420 | 2-68 | 395 | 2-08 | 270 |
| 13..... | 4-26 | 810 | 1-57 | 180 | 2-49 | 355 | 2-86 | 430 | 2-68 | 395 | 2-08 | 270 |
| 14..... | 3-99 | 730 | 1-51 | 170 | 2-75 | 410 | 3-84 | 680 | 2-7 | 400 | 2-16 | 285 |
| 15..... | 3-67 | 630 | 1-5 | 170 | 4-09 | 755 | 4-39 | 840 | 2-73 | 405 | 2-18 | 290 |
| 16..... | 3-44 | 570 | 1-49 | 170 | 3-85 | 685 | 4-29 | 820 | 2-69 | 400 | 2-18 | 290 |
| 17..... | 3-23 | 520 | 1-48 | 165 | 3-62 | 645 | 3-95 | 715 | 2-6 | 375 | 2-17 | 285 |
| 18..... | 3-60 | 610 | 1-48 | 165 | 3-44 | 570 | 3-68 | 635 | 2-51 | 355 | 2-11 | 275 |
| 19..... | 2-94 | 455 | 1-48 | 165 | 3-3 | 535 | 3-95 | 715 | 2-48 | 350 | 2-08 | 270 |
| 20..... | 2-8 | 420 | 1-48 | 165 | 3-3 | 535 | 4-02 | 735 | 2-46 | 345 | 2-08 | 270 |
| 21..... | 2-66 | 390 | 1-56 | 180 | 3-3 | 535 | 3-8 | 670 | 2-48 | 350 | 1-98 | 250 |
| 22..... | 2-55 | 365 | 1-73 | 205 | 3-3 | 535 | 3-39 | 560 | 2-55 | 365 | 1-99 | 255 |
| 23..... | 2-41 | 335 | 1-88 | 230 | 3-23 | 520 | 3-08 | 485 | 2-59 | 375 | 1-99 | 255 |
| 24..... | 2-3 | 315 | 2-07 | 270 | 2-97 | 465 | 2-93 | 450 | 2-66 | 390 | 1-98 | 250 |
| 25..... | 2-23 | 300 | 2-17 | 290 | 2-89 | 445 | 2-73 | 405 | 2-65 | 385 | 1-98 | 250 |
| 26..... | 2-17 | 290 | 2-28 | 310 | 2-72 | 405 | 2-57 | 370 | 2-71 | 400 | 1-98 | 250 |
| 27..... | 2-08 | 270 | 2-97 | 465 | 2-55 | 365 | 2-63 | 380 | 2-63 | 380 | 1-98 | 250 |
| 28..... | 2-0 | 255 | 3-29 | 535 | 2-44 | 345 | 2-69 | 400 | 2-5 | 355 | 1-96 | 245 |
| 29..... | 2-05 | 265 | ..... | ..... | 2-28 | 310 | 2-68 | 395 | 2-43 | 340 | 1-89 | 235 |
| 30..... | 2-23 | 300 | ..... | ..... | 2-23 | 300 | 2-68 | 395 | 2-3 | 315 | 1-89 | 235 |
| 31..... | 2-3 | 315 | ..... | ..... | 2-17 | 290 | ..... | ..... | 2-29 | 315 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Little Qualicum River at Cameron lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-88 | 230 | 0-78 | 68 | 0-54 | 44 | 1-82 | 220 | 3-48 | 580 | 3-74 | 650 |
| 2..... | 1-81 | 215 | 0-75 | 65 | 0-52 | 42 | 1-88 | 230 | 4-78 | 965 | 3-44 | 570 |
| 3..... | 1-8 | 215 | 0-71 | 61 | 0-5 | 40 | 1-86 | 225 | 4-35 | 835 | 3-17 | 595 |
| 4..... | 1-77 | 210 | 0-72 | 62 | 0-49 | 39 | 1-8 | 215 | 5-85 | 1,300 | 2-98 | 465 |
| 5..... | 1-72 | 205 | 0-73 | 63 | 0-48 | 38 | 1-74 | 205 | 5-4 | 1,150 | 2-81 | 420 |
| 6..... | 1-7 | 200 | 0-71 | 61 | 0-48 | 38 | 1-66 | 190 | 4-9 | 1,000 | 2-63 | 385 |
| 7..... | 1-67 | 195 | 0-71 | 61 | 0-49 | 39 | 1-58 | 180 | 5-15 | 1,075 | 2-48 | 530 |
| 8..... | 1-51 | 170 | 0-70 | 60 | 0-50 | 40 | 1-49 | 170 | 5-0 | 1,130 | 2-39 | 335 |
| 9..... | 1-48 | 170 | 0-70 | 60 | 0-51 | 41 | 1-42 | 160 | 4-72 | 945 | 2-33 | 320 |
| 10..... | 1-46 | 165 | 0-70 | 60 | 0-51 | 41 | 1-37 | 150 | 4-49 | 875 | 2-14 | 285 |
| 11..... | 1-4 | 155 | 0-69 | 59 | 0-56 | 46 | 1-37 | 150 | 4-44 | 860 | 2-3 | 315 |
| 12..... | 1-37 | 150 | 0-68 | 58 | 0-55 | 45 | 1-6 | 185 | 4-15 | 775 | 1-97 | 250 |
| 13..... | 1-34 | 145 | 0-68 | 58 | 0-55 | 45 | 4-7 | 940 | 3-84 | 680 | 1-89 | 245 |
| 14..... | 1-29 | 140 | 0-67 | 57 | 0-57 | 47 | 5-84 | 1,290 | 3-52 | 590 | 1-82 | 220 |
| 15..... | 1-25 | 135 | 0-66 | 56 | 0-61 | 51 | 5-13 | 1,070 | 3-24 | 520 | 1-75 | 210 |
| 16..... | 1-19 | 125 | 0-65 | 55 | 0-66 | 56 | 5-18 | 1,080 | 2-99 | 470 | 1-7 | 200 |
| 17..... | 1-18 | 120 | 0-6 | 50 | 0-69 | 59 | 6-4 | 1,500 | 2-76 | 410 | 1-67 | 195 |
| 18..... | 1-15 | 115 | 0-59 | 49 | 0-70 | 60 | 7-8 | 2,030 | 2-61 | 375 | 1-59 | 185 |
| 19..... | 1-13 | 115 | 0-60 | 50 | 1-15 | 117 | 7-2 | 1,790 | 2-68 | 395 | 1-55 | 180 |
| 20..... | 1-10 | 110 | 0-60 | 50 | 1-48 | 167 | 6-98 | 1,700 | 3-1 | 490 | 1-49 | 170 |
| 21..... | 1-03 | 103 | 0-59 | 49 | 1-60 | 185 | 6-05 | 1,370 | 3-35 | 545 | 1-46 | 165 |
| 22..... | 1-0 | 100 | 0-59 | 49 | 1-58 | 180 | 5-05 | 1,045 | 3-38 | 555 | 1-39 | 155 |
| 23..... | 0-89 | 83 | 0-58 | 48 | 1-52 | 173 | 4-3 | 820 | 4-54 | 890 | 1-39 | 155 |
| 24..... | 0-85 | 78 | 0-58 | 48 | 1-43 | 160 | 3-64 | 620 | 5-5 | 1,180 | 1-37 | 150 |
| 25..... | 0-82 | 73 | 0-57 | 47 | 1-31 | 140 | 3-32 | 540 | 5-74 | 1,260 | 1-32 | 145 |
| 26..... | 0-82 | 73 | 0-56 | 46 | 1-3 | 140 | 2-97 | 460 | 5-7 | 1,250 | 1-31 | 140 |
| 27..... | 0-82 | 73 | 0-55 | 45 | 1-3 | 140 | 2-7 | 490 | 5-11 | 1,060 | 1-29 | 140 |
| 28..... | 0-85 | 78 | 0-55 | 45 | 1-42 | 158 | 2-48 | 380 | 4-95 | 1,015 | 1-28 | 135 |
| 29..... | 0-81 | 71 | 0-55 | 45 | 1-49 | 170 | 2-19 | 295 | 4-51 | 880 | 1-25 | 130 |
| 30..... | 0-79 | 69 | 0-55 | 45 | 1-65 | 192 | 2-26 | 305 | 4-1 | 760 | 1-29 | 140 |
| 31..... | 0-78 | 68 | 0-55 | 45 | | | 3-04 | 480 | | | 1-3 | 140 |

NANAIMO RIVER (1028).

Location.—Six miles from mouth; 800 feet upstream from Canadian Collieries railway bridge; 8 miles from Ladysmith.

Records available.—Gauge readings daily, February 11, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to March 31, 1914, Provincial Water Rights Branch; April 1, 1914, to December 31, 1914.

Drainage area.—Two hundred and forty-nine square miles.

Gauge.—Twelve-foot wooden staff nailed to tree, left bank, 50 feet upstream from section.

Channel.—Straight 200 feet on each side of section, even gravel bed, good control 400 feet downstream.

Discharge measurements.—One in 1911, four in 1913 by Provincial Water Rights Branch; two in 1914, covering all but high stages.

Winter flow.—Open all winter.

Accuracy.—Between discharge of 20 and 3,000 cubic feet per second accuracy B. Above discharge of 3,000 cubic feet per second, accuracy C.

Co-operation.—Provincial Water Rights Branch established station in 1913.

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NANAIMO RIVER (1025).

The Nanaimo river rises in the mountains at an altitude of some 5,000 feet, and flows in an easterly direction to its mouth, about 2 miles south of Nanaimo, in the strait of Georgia. Nanaimo river is some 35 miles in length. It is fed by many streams, the larger of which are Jump creek, which enters near the Nanaimo lakes, and Haslam creek which enters about 4 miles from the mouth.

The gauging station is located near the Canadian Collieries railway bridge, about 6 miles from mouth. The drainage area above gauging station is 249 square miles. There are two lakes, covering an area of 2 square miles, known as the Nanaimo lakes, at an altitude of 700 feet on the Nanaimo river about 12 miles above gauging station.

The precipitation varies from 30 inches at mouth of river to about 60 inches at headwaters.

The power possibilities of the Nanaimo river were investigated during 1914 by the engineers of the Provincial Water Rights Branch.

The following is taken from the Water Rights Branch report for 1914:—

“There do not appear to be any concentrated falls, but apparently with storage in the two lakes, four power sites might be developed namely,—

| Power Site. | Head. | Available H P. |
|---|-------|----------------|
| Cassiday Canyon to Wellington Collieries Bridge..... | 110 | 5,000 |
| Wellington Collieries Bridge to South Fork Road Bridge..... | 230 | 11,300 |
| South Fork Road Bridge to South Fork..... | 150 | 6,806 |
| South Fork to storage dam..... | 80 | 3,000 |
| | 570 | 26,100 |

The Nanaimo river flows through a large coal mining district. The towns of Ladysmith and Nanaimo are also both within a reasonable distance. These should offer a good market for hydro-electric power.

DISCHARGE MEASUREMENTS of Nanaimo River near Canadian Collieries Ry. bridge, for 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section. | Mean Velocity | Gauge Height | Discharge. |
|----------|-----------------|-----------|-------|------------------|---------------|--------------|------------|
| | | | Feet. | Sq ft | Ft per sec. | Feet | Sec-ft. |
| 1914. | | | | | | | |
| July 8 | Webb and Cotton | 1057 | 128 | 240 | 0.3 | 1.60 | 317* |
| Aug. 10. | C P Cotton | 1057 | 120 | 139 | 0.7 | 0.80 | 93 |

* Station established

MONTHLY DISCHARGE of Nanaimo River six miles from mouth, for 1914.

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|------------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth, in inches on Drainage area. | Total in acre-feet. | |
| January..... | 25,300 | 770 | 3,840 | 15-40 | 17-80 | 236,000 | C |
| February..... | 4,980 | 570 | 1,240 | 4-98 | 5-19 | 68,900 | B |
| March..... | 8,320 | 980 | 2,520 | 10-10 | 11-60 | 155,000 | C |
| April..... | 6,510 | 980 | 2,430 | 9-75 | 10-90 | 145,000 | C |
| May..... | 1,850 | 690 | 1,070 | 4-30 | 4-96 | 65,600 | B |
| June..... | 840 | 500 | 650 | 2-61 | 2-91 | 38,700 | B |
| July..... | 485 | 130 | 265 | 1-06 | 1-22 | 16,300 | B |
| August..... | 130 | 70 | 93 | 0-37 | 0-43 | 5,700 | B |
| September..... | 1,220 | 68 | 335 | 1-35 | 1-51 | 19,900 | B |
| October..... | 11,660 | 360 | 3,290 | 13-20 | 15-20 | 202,000 | C |
| November..... | 10,650 | 880 | 4,390 | 17-60 | 19-60 | 261,000 | C |
| December..... | 3,140 | 330 | 740 | 2-98 | 3-44 | 45,500 | B |
| The year..... | 25,300 | 68 | 1,739 | 6-98 | 94-76 | 1,259,600 | C |

DAILY GAUGE HEIGHT AND DISCHARGE of Nanaimo River six miles from mouth, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3-01 | 1,210 | 3-2 | 1,400 | 6-64 | 8,320 | 2-77 | 1,010 | 3-09 | 1,290 | 2-42 | 770 |
| 2..... | 3-91 | 2,275 | 3-01 | 1,210 | 5-64 | 6,020 | 2-8 | 1,040 | 3-44 | 1,650 | 2-53 | 840 |
| 3..... | 5-3 | 5,250 | 2-8 | 1,040 | 4-94 | 4,440 | 3-54 | 1,770 | 3-39 | 1,590 | 2-5 | 820 |
| 4..... | 13-8 | 25,300 | 2-68 | 950 | 4-43 | 3,300 | 4-58 | 3,630 | 3-09 | 1,290 | 2-33 | 720 |
| 5..... | 9-29 | 14,500 | 2-51 | 830 | 3-92 | 2,290 | 5-4 | 5,480 | 2-89 | 1,110 | 2-15 | 610 |
| 6..... | 8-99 | 13,800 | 2-39 | 750 | 3-52 | 1,750 | 4-61 | 3,690 | 2-78 | 1,020 | 2-03 | 540 |
| 7..... | 6-77 | 8,620 | 2-29 | 690 | 3-25 | 1,450 | 4-01 | 2,420 | 2-77 | 1,010 | 2-07 | 560 |
| 8..... | 5-25 | 5,140 | 2-21 | 650 | 3-2 | 1,400 | 3-69 | 1,970 | 2-9 | 1,120 | 2-31 | 710 |
| 9..... | 4-35 | 3,135 | 2-12 | 590 | 3-19 | 1,390 | 3-58 | 1,820 | 2-93 | 1,140 | 2-36 | 740 |
| 10..... | 3-93 | 2,300 | 2-11 | 590 | 3-09 | 1,290 | 3-62 | 1,880 | 2-94 | 1,150 | 2-38 | 750 |
| 11..... | 4-79 | 4,130 | 2-1 | 580 | 2-93 | 1,140 | 3-6 | 1,850 | 2-96 | 1,160 | 2-27 | 680 |
| 12..... | 4-72 | 3,940 | 2-09 | 570 | 1-93 | 485 | 3-48 | 1,700 | 2-93 | 1,140 | 2-26 | 670 |
| 13..... | 4-6 | 3,670 | 2-16 | 620 | 3-81 | 2,130 | 3-78 | 2,090 | 2-98 | 1,180 | 2-29 | 690 |
| 14..... | 4-19 | 2,800 | 2-22 | 650 | 6-36 | 7,680 | 5-17 | 4,960 | 3-03 | 1,230 | 2-34 | 720 |
| 15..... | 3-55 | 1,790 | 2-3 | 700 | 5-25 | 5,140 | 5-85 | 6,510 | 2-99 | 1,190 | 2-41 | 770 |
| 16..... | 3-88 | 2,230 | 2-35 | 730 | 4-44 | 3,320 | 4-85 | 4,240 | 2-82 | 1,060 | 2-43 | 780 |
| 17..... | 3-59 | 1,840 | 2-41 | 770 | 4-22 | 2,860 | 4-04 | 2,480 | 2-69 | 950 | 2-36 | 740 |
| 18..... | 3-41 | 1,610 | 2-48 | 810 | 4-03 | 2,460 | 4-33 | 3,090 | 2-59 | 880 | 2-27 | 680 |
| 19..... | 3-42 | 1,620 | 2-45 | 830 | 3-94 | 2,320 | 5-04 | 4,660 | 2-56 | 860 | 2-23 | 660 |
| 20..... | 3-32 | 1,520 | 2-54 | 850 | 4-09 | 2,590 | 4-58 | 3,630 | 2-59 | 880 | 2-03 | 540 |
| 21..... | 3-24 | 1,440 | 2-73 | 980 | 4-06 | 2,520 | 3-89 | 2,250 | 2-7 | 960 | 1-98 | 500 |
| 22..... | 3-08 | 1,280 | 3-28 | 1,480 | 3-99 | 2,380 | 3-41 | 1,610 | 2-84 | 1,070 | 2-01 | 530 |
| 23..... | 2-98 | 1,180 | 3-43 | 1,640 | 3-69 | 1,970 | 3-14 | 1,340 | 2-9 | 1,120 | 2-03 | 540 |
| 24..... | 2-75 | 1,000 | 3-83 | 2,160 | 3-4 | 1,600 | 2-94 | 1,150 | 2-85 | 1,080 | 2-04 | 540 |
| 25..... | 2-69 | 950 | 3-69 | 1,970 | 3-19 | 1,390 | 2-81 | 1,050 | 2-8 | 1,040 | 2-14 | 620 |
| 26..... | 2-68 | 940 | 3-48 | 1,700 | 2-93 | 1,140 | 2-72 | 980 | 2-82 | 1,060 | 2-2 | 640 |
| 27..... | 2-59 | 880 | 5-18 | 4,980 | 2-79 | 1,030 | 2-92 | 1,140 | 2-79 | 1,030 | 2-13 | 600 |
| 28..... | 2-42 | 770 | 4-75 | 4,000 | 2-74 | 990 | 2-94 | 1,150 | 2-58 | 880 | 2-07 | 560 |
| 29..... | 2-59 | 880 | | | 2-72 | 980 | 2-88 | 1,100 | 2-36 | 740 | 2-0 | 520 |
| 30..... | 3-31 | 1,510 | | | 2-83 | 1,060 | 2-84 | 1,070 | 2-28 | 690 | 2-01 | 530 |
| 31..... | 3-33 | 1,530 | | | 2-84 | 1,070 | | | 2-31 | 710 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Nanaimo River six miles from mouth,
for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1.93 | 485 | 0.88 | 130 | 0.50 | 70 | 2.43 | 780 | 6.6 | 8,230 | 4.35 | 3,140 |
| 2..... | 1.91 | 475 | 0.85 | 120 | 0.50 | 70 | 2.61 | 900 | 7.65 | 10,650 | 3.79 | 2,110 |
| 3..... | 1.88 | 460 | 0.83 | 115 | 0.51 | 71 | 2.51 | 830 | 6.47 | 7,930 | 3.47 | 1,680 |
| 4..... | 1.8 | 420 | 0.82 | 115 | 0.49 | 69 | 2.38 | 750 | 6.55 | 8,120 | 3.23 | 1,430 |
| 5..... | 1.73 | 390 | 0.8 | 110 | 0.48 | 68 | 2.15 | 610 | 5.7 | 6,160 | 3.05 | 1,250 |
| 6..... | 1.65 | 360 | 0.78 | 105 | 0.49 | 69 | 2.0 | 520 | 4.35 | 3,140 | 2.84 | 1,070 |
| 7..... | 1.6 | 340 | 0.76 | 100 | 0.58 | 78 | 1.87 | 455 | 3.85 | 2,190 | 2.68 | 950 |
| 8..... | 1.6 | 340 | 0.78 | 105 | 0.62 | 82 | 1.74 | 395 | 4.65 | 3,780 | 2.57 | 870 |
| 9..... | 1.51 | 305 | 0.79 | 110 | 0.65 | 85 | 1.65 | 360 | 5.44 | 5,570 | 2.42 | 770 |
| 10..... | 1.5 | 300 | 0.8 | 110 | 0.64 | 84 | 1.75 | 400 | 4.65 | 3,780 | 2.31 | 710 |
| 11..... | 1.49 | 295 | 0.76 | 100 | 0.67 | 87 | 1.71 | 380 | 4.8 | 4,120 | 2.22 | 650 |
| 12..... | 1.47 | 290 | 0.75 | 100 | 0.67 | 87 | 3.83 | 2,160 | 4.22 | 2,860 | 2.13 | 600 |
| 13..... | 1.44 | 280 | 0.74 | 100 | 0.69 | 89 | 7.97 | 11,500 | 3.83 | 2,160 | 2.05 | 550 |
| 14..... | 1.43 | 280 | 0.72 | 95 | 0.7 | 91 | 6.15 | 7,200 | 3.41 | 1,610 | 1.99 | 510 |
| 15..... | 1.39 | 265 | 0.71 | 90 | 0.74 | 100 | 4.7 | 3,890 | 3.26 | 1,460 | 1.94 | 490 |
| 16..... | 1.34 | 250 | 0.67 | 87 | 0.8 | 110 | 7.5 | 10,300 | 2.91 | 1,130 | 1.88 | 460 |
| 17..... | 1.31 | 245 | 0.69 | 89 | 1.01 | 155 | 7.86 | 11,200 | 2.73 | 980 | 1.8 | 420 |
| 18..... | 1.3 | 240 | 0.67 | 87 | 1.56 | 325 | 8.05 | 11,600 | 2.58 | 880 | 1.75 | 400 |
| 19..... | 1.29 | 235 | 0.65 | 85 | 2.75 | 1,000 | 7.73 | 10,900 | 3.88 | 2,210 | 1.77 | 400 |
| 20..... | 1.2 | 210 | 0.64 | 84 | 3.02 | 1,220 | 6.55 | 8,120 | 4.54 | 3,540 | 1.69 | 375 |
| 21..... | 1.16 | 200 | 0.64 | 84 | 2.68 | 950 | 5.13 | 4,870 | 4.64 | 3,760 | 1.69 | 375 |
| 22..... | 1.12 | 185 | 0.62 | 82 | 2.28 | 690 | 4.19 | 2,800 | 5.15 | 4,920 | 1.64 | 360 |
| 23..... | 1.1 | 180 | 0.6 | 80 | 2.0 | 520 | 3.6 | 1,850 | 5.95 | 6,730 | 1.6 | 340 |
| 24..... | 1.09 | 175 | 0.59 | 79 | 1.78 | 410 | 3.18 | 1,830 | 6.28 | 7,490 | 1.59 | 335 |
| 25..... | 1.07 | 170 | 0.58 | 78 | 1.6 | 340 | 2.91 | 1,130 | 6.98 | 9,100 | 1.58 | 330 |
| 26..... | 1.04 | 160 | 0.56 | 76 | 1.68 | 370 | 2.66 | 930 | 5.48 | 5,650 | 1.6 | 340 |
| 27..... | 1.01 | 155 | 0.55 | 75 | 1.86 | 450 | 2.48 | 810 | 4.85 | 4,230 | 1.6 | 340 |
| 28..... | 0.99 | 150 | 0.54 | 74 | 2.33 | 720 | 2.32 | 710 | 4.84 | 4,210 | 1.61 | 345 |
| 29..... | 0.96 | 140 | 0.52 | 72 | 2.4 | 760 | 2.2 | 640 | 4.25 | 2,930 | 1.63 | 350 |
| 30..... | 0.92 | 135 | 0.52 | 72 | 2.53 | 840 | 2.63 | 910 | 3.82 | 2,150 | 1.71 | 385 |
| 31..... | 0.9 | 130 | 0.5 | 70 | ..... | ..... | 4.06 | 2,520 | ..... | ..... | 2.16 | 620 |

OYSTER RIVER VANCOUVER ISLAND (1040).

Location.—One mile from mouth, upstream side of Island highway bridge, 18 miles from Courtenay.

Records available.—Gauge readings twice daily, June 1, 1914, to December 31, 1914.

Drainage area.—Seventy square miles.

Gauge.—Twelve-foot enamel staff, nailed to cribbing on right bank, 20 feet downstream from bridge.

Channel.—Straight for 150 feet upstream and 400 feet downstream, gravel bed, good control.

Extreme low water measurements taken 1,000 feet upstream from bridge.

Discharge measurements.—Four in 1914, covering all but high stage.

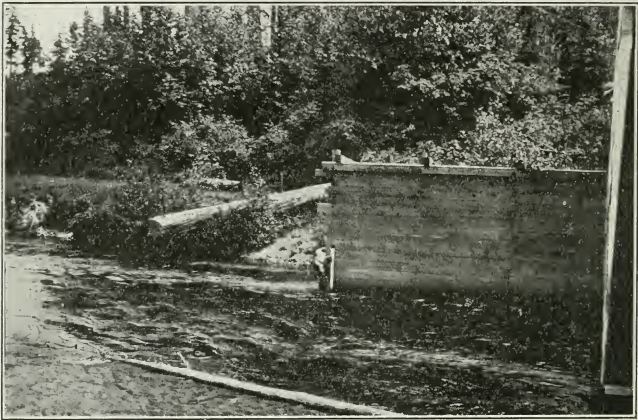
Winter flow.—Open all year.

Accuracy.—Between discharge of 80 and 1,400 cubic feet per second, accuracy B. Above discharge of 1,400 cubic feet per second, accuracy C.

OYSTER RIVER (1040).

Oyster river rises in the mountains at an elevation of over 4,000 feet, and flows in an easterly direction to its mouth in the strait of Georgia, about 12 miles south of Campbell river. Oyster river is some 18 miles in length. Many branches from the mountains make up the main stream.

The river is fast and flashy. In the summer months the flow is small, as there is no natural storage. The valleys are still thickly wooded, although considerable timber has been taken out. There are several fine farms near its mouth.



Installing metal faced gauge at metering section on Oyster river, Vancouver Island.

The metering station is at the Island highway bridge. This highway crosses the river about 1 mile from mouth.

The precipitation is heavy, varying from 80 inches at the mouth of river to over 100 inches at headwaters. The power possibilities on this stream as yet have not been investigated by this survey.

DISCHARGE MEASUREMENTS of Oyster River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------|---------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| June 1. | Webb & Cotton | 1,057 | 135 | 298 | 3.5 | 2.70 | 1,040 ¹ |
| July 18 | C. P. Cotton | 1,057 | 137 | 262 | 2.6 | 2.10 | 889 |
| Sept. 5 | C. E. Webb | 1,057 | 67 | 66 | 1.3 | 0.92 | 86.4 ² |
| Nov. 11. | " | 1,057 | 134 | 358 | 3.9 | 3.50 | 1,380 |

¹Station established.
²Low-water section.

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MONTHLY DISCHARGE of Oyster River one mile from mouth, for 1914.

(Drainage area, 70 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June..... | 1,330 | 710 | 950 | 13.60 | 15.20 | 56,500 | B |
| July..... | 1,080 | 340 | 700 | 10.00 | 11.50 | 43,000 | B |
| August..... | 410 | 140 | 275 | 3.93 | 4.53 | 16,900 | B |
| September..... | 1,470 | 90 | 350 | 5.00 | 5.58 | 20,800 | B |
| October..... | 3,000 | 270 | 1,040 | 14.80 | 17.06 | 64,000 | C |
| November..... | 2,170 | 540 | 1,280 | 18.30 | 20.40 | 76,200 | C |
| December..... | 1,030 | 140 | 460 | 6.57 | 7.56 | 28,300 | B |

DAILY GAUGE HEIGHT AND DISCHARGE of Oyster River one mile from mouth, for 1914.

| DAY. | June. | | July. | | August | | September. | | October. | | November. | |
|---------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2.7 | 950 | 2.8 | 1,030 | 1.4 | 340 | 1.0 | 140 | 1.7 | 490 | 3.52 | 1,390 |
| 2..... | 2.9 | 1,080 | 2.9 | 1,080 | 1.48 | 380 | 1.0 | 140 | 1.7 | 490 | 3.6 | 1,420 |
| 3..... | 2.85 | 1,050 | 2.85 | 1,050 | 1.5 | 390 | 1.0 | 140 | 1.65 | 470 | 3.55 | 1,400 |
| 4..... | 2.65 | 960 | 2.7 | 980 | 1.5 | 390 | 1.0 | 140 | 1.6 | 440 | 3.65 | 1,450 |
| 5..... | 2.35 | 800 | 2.5 | 880 | 1.45 | 360 | 0.95 | 115 | 1.55 | 410 | 3.4 | 1,330 |
| 6..... | 2.15 | 710 | 2.35 | 810 | 1.47 | 370 | 0.9 | 90 | 1.45 | 370 | 2.85 | 1,050 |
| 7..... | 2.2 | 730 | 2.25 | 750 | 1.52 | 490 | 0.9 | 90 | 1.35 | 310 | 2.6 | 930 |
| 8..... | 2.5 | 880 | 2.3 | 780 | 1.53 | 410 | 0.9 | 90 | 1.3 | 290 | 4.8 | 2,020 |
| 9..... | 2.4 | 830 | 2.25 | 769 | 1.5 | 390 | 0.9 | 90 | 1.25 | 270 | 4.8 | 2,020 |
| 10..... | 2.55 | 900 | 2.3 | 780 | 1.4 | 340 | 0.9 | 90 | 1.4 | 340 | 3.55 | 1,400 |
| 11..... | 2.55 | 900 | 2.4 | 830 | 1.4 | 340 | 0.9 | 90 | 1.58 | 430 | 3.5 | 1,380 |
| 12..... | 2.65 | 950 | 2.35 | 810 | 1.4 | 340 | 0.9 | 90 | 2.55 | 9.0 | 3.0 | 1,130 |
| 13..... | 2.8 | 1,030 | 2.35 | 800 | 1.4 | 340 | 0.9 | 90 | 6.4 | 2,820 | 2.65 | 950 |
| 14..... | 3.0 | 1,130 | 2.35 | 810 | 1.35 | 310 | 0.9 | 90 | 5.0 | 2,120 | 2.45 | 860 |
| 15..... | 3.25 | 1,250 | 2.25 | 750 | 1.33 | 300 | 0.9 | 90 | 3.45 | 1,350 | 2.25 | 750 |
| 16..... | 3.4 | 1,330 | 2.2 | 730 | 1.3 | 290 | 1.13 | 205 | 6.75 | 3,000 | 2.0 | 640 |
| 17..... | 3.15 | 1,210 | 2.25 | 750 | 1.25 | 270 | 1.33 | 305 | 5.45 | 2,350 | 1.9 | 590 |
| 18..... | 3.1 | 1,180 | 2.2 | 730 | 1.2 | 240 | 1.35 | 315 | 4.45 | 1,840 | 1.8 | 540 |
| 19..... | 2.75 | 1,000 | 2.2 | 730 | 1.2 | 240 | 3.7 | 1,470 | 4.6 | 1,920 | | 800 |
| 20..... | 2.65 | 910 | 2.2 | 730 | 1.15 | 220 | 2.95 | 1,100 | 3.65 | 1,450 | | 1,000 |
| 21..... | 2.35 | 800 | 1.95 | 620 | 1.15 | 210 | 2.25 | 760 | 3.85 | 1,540 | 3.3 | 1,280 |
| 22..... | 2.25 | 750 | 1.75 | 510 | 1.1 | 190 | 2.05 | 660 | 3.85 | 1,550 | 4.1 | 1,670 |
| 23..... | 2.25 | 760 | 1.7 | 490 | 1.1 | 190 | 1.85 | 570 | 3.0 | 1,130 | 4.1 | 1,670 |
| 24..... | 2.25 | 750 | 1.75 | 520 | 1.1 | 190 | 1.73 | 500 | 2.35 | 800 | 4.8 | 2,020 |
| 25..... | 2.85 | 1,050 | 1.7 | 490 | 1.0 | 190 | 1.6 | 410 | 2.05 | 660 | 5.1 | 2,170 |
| 26..... | 2.7 | 980 | 1.7 | 490 | 1.05 | 160 | 1.6 | 440 | 1.85 | 560 | 3.75 | 1,500 |
| 27..... | 2.55 | 910 | 1.65 | 470 | 1.05 | 170 | 1.75 | 510 | 1.9 | 590 | 3.6 | 1,420 |
| 28..... | 2.45 | 850 | 1.55 | 410 | 1.05 | 160 | 1.8 | 540 | 1.8 | 540 | 3.6 | 1,420 |
| 29..... | 2.5 | 890 | 1.5 | 390 | 1.05 | 170 | 1.8 | 540 | 1.7 | 490 | 3.05 | 1,150 |
| 30..... | 2.65 | 960 | 1.48 | 380 | 1.0 | 140 | 1.7 | 490 | 2.75 | 1,000 | 2.8 | 1,030 |
| 31..... | ..... | ..... | 1.4 | 340 | 1.0 | 140 | ..... | ..... | 3.5 | 1,380 | ..... | ..... |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Oyster River one mile from mouth,
for 1914—*Con.*

| DAY. | December. | |
|------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1 | 2-55 | 900 |
| 2 | 2-45 | 860 |
| 3 | 2-8 | 1,030 |
| 4 | 2-6 | 930 |
| 5 | 2-4 | 830 |
| 6 | 2-25 | 750 |
| 7 | 2-2 | 730 |
| 8 | 2-1 | 680 |
| 9 | 2-0 | 640 |
| 10 | 1-85 | 570 |
| 11 | 1-65 | 460 |
| 12 | 1-6 | 440 |
| 13 | 1-6 | 440 |
| 14 | 1-5 | 390 |
| 15 | 1-4 | 340 |
| 16 | 1-4 | 340 |
| 17 | 1-25 | 260 |
| 18 | 1-25 | 270 |
| 19 | 1-3 | 290 |
| 20 | 1-2 | 240 |
| 21 | 1-2 | 240 |
| 22 | 1-2 | 240 |
| 23 | 1-1 | 190 |
| 24 | 1-1 | 190 |
| 25 | 1-0 | 140 |
| 26 | 1-1 | 190 |
| 27 | 1-15 | 210 |
| 28 | 1-15 | 220 |
| 29 | 1-15 | 210 |
| 30 | 1-45 | 370 |
| 31 | | 640 |

PUNTLIDGE RIVER, VANCOUVER ISLAND (1036).

Location.—One mile from mouth, downstream side of highway bridge, 1 mile from Courtenay.

Records available.—Gauge readings twice a day, May 30 1914, to December 31, 1914.

Drainage area.—Two hundred square miles.

Gauge.—Fourteen-foot wooden staff nailed to piling of right abutment of trussed span of railway bridge, downstream side.

Channel.—Straight for 800 feet upstream, and 200 feet downstream, even gravel bed; good control; one channel, except in extreme high water when there is one small side channel.

Discharge Measurements.—Four in 1914, covering all but highest stage.

Winter flow.—Open all year.

Accuracy.—Between discharge of 400 and 4,000 cubic feet per second, accuracy B. Below discharge of 400 and above 4,000 cubic feet per second, accuracy C.

PUNTLIDGE RIVER (1036).

The Puntledge river flows from Comox lake to the sea in Comox harbour, a distance of about 8 miles. Comox lake covers an area of about 9 square miles, and lies at an altitude of some 430 feet. The lake is fed from the mountains by several large creeks, the most important of which are the Cruikshank river and Trout creek. The drainage area of Puntledge river is 200 square miles.

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The precipitation is heavy, varying from 70 inches at mouth to over 100 inches at headwaters.

The Canadian Collieries (Dunsmuir), Limited, have installed a hydroelectric development for 25,000 horse-power on this river about 5 miles below Comox lake. A brief description of this development may be found under the heading of "Hydro-Electric Developments in Operation."

Brown river, a tributary entering the Puntledge river from the north, is being investigated with a view of obtaining a water supply for the town of Courtenay.

Another small development may be made on the Puntledge river, about half a mile below the power-house of the Canadian Collieries plant, by the erection of a dam.

DISCHARGE MEASUREMENTS of Puntledge River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|-----------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May...30..... | Webb & Cotton..... | 1057 | 186 | 463 | 5.3 | 3.58 | 2,450* |
| July 17..... | C. P. Cotton..... | 1057 | 146 | 378 | 4.8 | 3.50 | 1,820 |
| Sept. 4..... | C. E. Webb..... | 1057 | 127 | 159 | 2.9 | 1.80 | 457 |
| Nov. 10..... | do..... | 1057 | 324 | 631 | 5.5 | 4.68 | 3,490 |

*Station established.

MONTHLY DISCHARGE of Puntledge River one mile from mouth, for 1914.

(Drainage area, 200 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET | | | | RUN-OFF. | | Accuracy |
|----------------|--------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June..... | 2,250 | 1,570 | 1,840 | 9.20 | 10.30 | 109,000 | B |
| July..... | 2,310 | 800 | 1,400 | 7.00 | 8.07 | 86,100 | B |
| August..... | 840 | 480 | 610 | 3.05 | 3.52 | 37,500 | B |
| September..... | 2,550 | 450 | 750 | 3.75 | 4.18 | 44,600 | B |
| October..... | 13,000 | 680 | 3,950 | 19.75 | 22.75 | 243,000 | C |
| November..... | 3,810 | 2,550 | 3,220 | 16.10 | 18.00 | 192,000 | B |
| December..... | 3,180 | 510 | 1,380 | 6.90 | 8.00 | 84,900 | B |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River one mile from mouth, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | October. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 3.7 | 2,190 | 3.42 | 1,870 | 2.25 | 800 | 1.8 | 480 | 2.6 | 1,090 |
| 2 | | | 3.75 | 2,250 | 3.55 | 2,010 | 2.3 | 840 | 1.8 | 480 | 2.57 | 1,060 |
| 3 | | | 3.75 | 2,250 | 3.6 | 2,070 | 2.27 | 820 | 1.8 | 480 | 2.55 | 1,040 |
| 4 | | | 3.65 | 2,130 | 3.65 | 2,130 | 2.2 | 760 | 1.8 | 480 | 2.5 | 1,000 |
| 5 | | | 3.5 | 1,950 | 3.8 | 2,310 | 2.15 | 720 | 1.8 | 480 | 2.5 | 1,000 |
| 6 | | | 3.4 | 1,850 | 3.8 | 2,310 | 2.15 | 720 | 1.8 | 480 | 2.45 | 960 |
| 7 | | | 3.5 | 1,950 | 3.5 | 1,950 | 2.2 | 760 | 1.8 | 480 | 2.4 | 920 |
| 8 | | | 3.55 | 2,010 | 3.1 | 1,550 | 2.2 | 760 | 1.8 | 480 | 2.3 | 840 |
| 9 | | | 3.5 | 1,950 | 2.95 | 1,410 | 2.2 | 760 | 1.8 | 480 | 2.15 | 720 |
| 10 | | | 3.5 | 1,950 | 2.8 | 1,270 | 2.15 | 720 | 1.8 | 480 | 2.1 | 680 |
| 11 | | | 3.53 | 1,990 | 2.8 | 1,270 | 2.05 | 640 | 1.8 | 480 | 3.3 | 1,750 |
| 12 | | | 3.58 | 2,050 | 2.84 | 1,310 | 1.95 | 570 | 1.8 | 480 | 5.45 | 4,810 |
| 13 | | | 3.58 | 2,050 | 2.87 | 1,330 | 1.9 | 540 | 1.8 | 480 | 5.6 | 5,100 |
| 14 | | | 3.55 | 2,010 | 2.95 | 1,410 | 1.9 | 540 | 1.8 | 480 | 5.4 | 4,720 |
| 15 | | | 3.3 | 1,750 | 3.13 | 1,580 | 1.9 | 540 | 1.75 | 450 | 7.65 | 9,880 |
| 16 | | | 3.25 | 1,700 | 3.4 | 1,850 | 1.95 | 570 | 1.8 | 480 | 8.9 | 13,000 |
| 17 | | | 3.2 | 1,650 | 3.0 | 1,450 | 1.9 | 540 | 1.95 | 570 | 7.7 | 10,000 |
| 18 | | | 3.2 | 1,650 | 2.6 | 1,090 | 1.9 | 540 | 2.17 | 740 | 7.4 | 9,250 |
| 19 | | | 3.2 | 1,650 | 2.48 | 980 | 1.9 | 540 | 4.0 | 2,550 | 6.75 | 7,650 |
| 20 | | | 3.25 | 1,700 | 2.85 | 1,310 | 1.9 | 540 | 2.55 | 1,050 | 6.5 | 7,050 |
| 21 | | | 3.2 | 1,650 | 3.1 | 1,550 | 1.9 | 540 | 2.45 | 960 | 6.05 | 6,020 |
| 22 | | | 3.15 | 1,600 | 3.05 | 1,500 | 1.9 | 540 | 2.4 | 920 | 5.45 | 4,810 |
| 23 | | | 3.12 | 1,570 | 2.75 | 1,230 | 1.9 | 540 | 2.35 | 880 | 4.9 | 3,860 |
| 24 | | | 3.15 | 1,600 | 2.38 | 900 | 1.9 | 540 | 2.3 | 840 | 4.65 | 3,480 |
| 25 | | | 3.17 | 1,620 | 2.32 | 860 | 1.9 | 540 | 2.35 | 880 | 4.53 | 3,290 |
| 26 | | | 3.17 | 1,620 | 2.3 | 840 | 1.9 | 540 | 2.37 | 890 | 4.43 | 3,150 |
| 27 | | | 3.2 | 1,650 | 2.3 | 840 | 1.85 | 510 | 2.47 | 970 | 4.33 | 3,010 |
| 28 | | | 3.22 | 1,670 | 2.3 | 840 | 1.85 | 510 | 2.65 | 1,140 | 4.3 | 2,970 |
| 29 | | | 3.32 | 1,770 | 2.27 | 820 | 1.85 | 510 | 2.85 | 1,310 | 4.3 | 2,970 |
| 30 | 3.6 | 2,070 | 3.37 | 1,820 | 2.25 | 800 | 1.8 | 480 | 2.68 | 1,160 | 4.35 | 3,040 |
| 31 | 3.65 | 2,130 | | | 2.25 | 800 | 1.8 | 480 | | | 4.48 | 3,220 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River one mile from mouth,
for 1914—*Con.*

| DAY. | NOVEMBER. | | DECEMBER. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 4.5 | 3,250 | 4.45 | 3,180 |
| 2..... | 4.57 | 3,350 | 4.37 | 3,070 |
| 3..... | 4.6 | 3,400 | 3.27 | 2,930 |
| 4..... | 4.52 | 3,280 | 4.17 | 2,790 |
| 5..... | 4.5 | 3,250 | 4.07 | 2,650 |
| 6..... | 4.57 | 3,350 | 4.0 | 2,550 |
| 7..... | 4.67 | 3,500 | 3.9 | 2,430 |
| 8..... | 4.77 | 3,650 | 3.82 | 2,330 |
| 9..... | 4.8 | 3,700 | 3.65 | 2,130 |
| 10..... | 4.72 | 3,580 | 3.45 | 1,900 |
| 11..... | 4.72 | 3,580 | 3.32 | 1,770 |
| 12..... | 4.57 | 3,350 | 3.17 | 1,620 |
| 13..... | 4.42 | 3,140 | 2.95 | 1,400 |
| 14..... | 4.27 | 2,930 | 2.75 | 1,230 |
| 15..... | 4.17 | 2,800 | 2.58 | 1,070 |
| 16..... | 4.12 | 2,720 | 2.4 | 920 |
| 17..... | 4.1 | 2,690 | 2.12 | 700 |
| 18..... | 4.02 | 2,580 | 2.1 | 680 |
| 19..... | 4.0 | 2,550 | 2.1 | 680 |
| 20..... | 4.0 | 2,530 | 2.05 | 640 |
| 21..... | 4.12 | 2,720 | 2.0 | 600 |
| 22..... | 4.22 | 2,860 | 2.0 | 600 |
| 23..... | 4.37 | 3,070 | 2.0 | 600 |
| 24..... | 4.52 | 3,280 | 1.95 | 570 |
| 25..... | 4.62 | 3,430 | 1.9 | 540 |
| 26..... | 4.75 | 3,620 | 1.9 | 540 |
| 27..... | 4.87 | 3,810 | 1.85 | 510 |
| 28..... | 4.85 | 3,780 | 1.85 | 510 |
| 29..... | 4.75 | 3,620 | 1.9 | 540 |
| 30..... | 4.55 | 3,330 | 1.92 | 550 |
| 31..... | | | 2.05 | 640 |

PUNTLLEDGE RIVER (1063) AT DIVERSION DAM.

Location.—At diversion dam of Puntledge river, hydro-electric installation, Canadian Collieries (Dunsmuir), Limited.

Records available.—June 7 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—175 square miles.

Gauge.—Wooden staff located on right bank fifty feet above diversion dam.

Channel.—Very even flow.

Discharge measurements.—Daily discharge obtained by weir measurements over diversion dam plus water to flume.

Winter flow.—Open all year.

Co-operation.—All data on this station supplied through the kindness of Mr. L. Netland, resident Engineer for Canadian Collieries (Dunsmuir) Ltd.

PUNTLLEDGE RIVER (1063) AT DIVERSION DAM OF PUNTLLEDGE RIVER HYDRO-ELECTRIC INSTALLATION.

The diversion dam of the Puntledge river hydro-electric installation is located about $2\frac{1}{2}$ miles below Comox lake. The drainage area above dam is 175 square miles.

The station was established in June, 1913, by the Canadian Collieries (Dunsmuir), Limited, and daily discharges are obtained by gauge readings at crest of weir at diversion dam. The flow into flume to intake is added to the discharge over dam.

Mr. L. Netland, resident engineer of the Canadian Collieries Company has kindly supplied all the data on this station.

For climatic conditions, etc., see description of Puntledge river, No. 1036, near mouth.

MONTHLY DISCHARGE of Puntledge River at Diversion dam for Power plant,
for 1914.

(Drainage area, 175 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 3,200 | 380 | 1,890 | 10.8 | 12.5 | 116,000 |
| February | 860 | 440 | 540 | 3.1 | 3.2 | 30,000 |
| March | 1,850 | 700 | 770 | 4.4 | 5.1 | 47,000 |
| April | 2,900 | 1,850 | 2,420 | 13.8 | 15.4 | 144,000 |
| May | 2,080 | 1,440 | 1,700 | 9.7 | 11.2 | 105,000 |
| June | 4,640 | 840 | 2,390 | 13.7 | 15.3 | 142,000 |
| July | 2,300 | 400 | 880 | 5.0 | 5.8 | 54,100 |
| August | 400 | 240 | 330 | 1.9 | 2.2 | 20,300 |
| September | 1,650 | 240 | 510 | 2.9 | 3.2 | 30,300 |
| October | 5,780 | 360 | 2,740 | 15.7 | 18.1 | 168,000 |
| November | 2,160 | 2,200 | 2,660 | 25.2 | 28.1 | 158,000 |
| December | 2,600 | 340 | 1,060 | 6.1 | 7.0 | 65,200 |
| The year | 5,780 | 240 | 1,490 | 9.4 | 127.1 | 1,079,900 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River at Diversion Dam,
Puntledge River Hydro-electric Installation, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | 380 | | 560 | | 860 | | 1,850 | | 2,080 | | 3,500 |
| 2..... | | 600 | | 600 | | 860 | | 1,850 | | 1,440 | | 5,400 |
| 3..... | | 800 | | 560 | | 800 | | 1,850 | | 1,840 | | 5,100 |
| 4..... | | 960 | | 560 | | 800 | | 2,000 | | 1,840 | | 4,640 |
| 5..... | | 1,200 | | 560 | | 700 | | 2,000 | | 1,760 | | 4,480 |
| 6..... | | 1,480 | | 560 | | 700 | | 2,050 | | 1,760 | | 4,200 |
| 7..... | | 2,200 | | 480 | | 700 | | 2,050 | | 1,750 | | 4,060 |
| 8..... | | 3,200 | | 480 | | 700 | | 2,300 | | 1,650 | | 3,900 |
| 9..... | | 2,200 | | 500 | | 700 | | 2,300 | | 1,650 | | 3,400 |
| 10..... | | 3,000 | | 500 | | 700 | | 2,300 | | 1,650 | | 3,100 |
| 11..... | | 3,000 | | 500 | | 700 | | 2,300 | | 1,650 | | 2,750 |
| 12..... | | 3,200 | | 500 | | 700 | | 2,380 | | 1,520 | | 2,640 |
| 13..... | | 3,180 | | 440 | | 760 | | 2,480 | | 1,520 | | 2,520 |
| 14..... | | 3,000 | | 440 | | 800 | | 2,750 | | 1,650 | | 2,320 |
| 15..... | | 2,900 | | 440 | | 800 | | 2,900 | | 1,750 | | 1,850 |
| 16..... | | 2,800 | | 460 | | 800 | | 2,760 | | 1,740 | | 920 |
| 17..... | | 2,600 | | 460 | | 760 | | 2,600 | | 1,740 | | 800 |
| 18..... | | 2,500 | | 460 | | 1,200 | | 2,600 | | 1,740 | | 1,280 |
| 19..... | | 2,400 | | 460 | | 800 | | 3,100 | | 1,740 | | 1,300 |
| 20..... | | 2,200 | | 460 | | 800 | | 3,100 | | 1,740 | | 1,240 |
| 21..... | | 2,100 | | 460 | | 800 | | 2,740 | | 1,740 | | 1,240 |
| 22..... | | 1,960 | | 460 | | 880 | | 2,800 | | 1,740 | | 1,240 |
| 23..... | | 1,760 | | 520 | | 1,800 | | 2,720 | | 1,730 | | 1,240 |
| 24..... | | 1,650 | | 650 | | 1,800 | | 2,600 | | 1,730 | | 1,160 |
| 25..... | | 1,480 | | 700 | | 1,850 | | 2,600 | | 1,730 | | 1,240 |
| 26..... | | 1,300 | | 700 | | 1,850 | | 2,500 | | 1,730 | | 1,240 |
| 27..... | | 1,150 | | 780 | | 1,850 | | 2,400 | | 1,730 | | 1,240 |
| 28..... | | 1,000 | | 860 | | 1,850 | | 2,300 | | 1,720 | | 1,240 |
| 29..... | | 660 | | | | 1,850 | | 2,200 | | 1,650 | | 1,240 |
| 30..... | | 400 | | | | 1,850 | | 2,200 | | 1,560 | | 1,240 |
| 31..... | | 460 | | | | 1,850 | | | | 1,560 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Puntledge River at Diversion Dam
Puntledge River Hydro-electric Installation, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | 1,440 | | 360 | | 240 | | 900 | | 2,500 | | 2,600 |
| 2..... | | 1,580 | | 360 | | 240 | | 800 | | 2,900 | | 2,600 |
| 3..... | | 1,580 | | 360 | | 240 | | 600 | | 2,760 | | 2,500 |
| 4..... | | 1,590 | | 361 | | 240 | | 560 | | 3,000 | | 2,300 |
| 5..... | | 1,780 | | 360 | | 240 | | 560 | | 2,720 | | 2,050 |
| 6..... | | 2,300 | | 360 | | 240 | | 560 | | 2,720 | | 2,050 |
| 7..... | | 2,050 | | 360 | | 240 | | 500 | | 2,720 | | 2,050 |
| 8..... | | 1,400 | | 360 | | 240 | | 450 | | 2,720 | | 2,000 |
| 9..... | | 700 | | 400 | | 240 | | 450 | | 3,000 | | 1,750 |
| 10..... | | 700 | | 400 | | 240 | | 360 | | 3,160 | | 1,550 |
| 11..... | | 700 | | 360 | | 240 | | 2,500 | | 3,160 | | 1,450 |
| 12..... | | 700 | | 340 | | 240 | | 3,200 | | 2,750 | | 1,200 |
| 13..... | | 700 | | 340 | | 240 | | 2,850 | | 2,750 | | 800 |
| 14..... | | 700 | | 340 | | 240 | | 4,800 | | 2,750 | | 560 |
| 15..... | | 700 | | 340 | | 240 | | 5,760 | | 2,600 | | 480 |
| 16..... | | 700 | | 340 | | 240 | | 5,780 | | 2,500 | | 460 |
| 17..... | | 660 | | 340 | | 240 | | 5,760 | | 2,500 | | 500 |
| 18..... | | 660 | | 340 | | 240 | | 5,300 | | 2,300 | | 500 |
| 19..... | | 660 | | 340 | | 250 | | 4,960 | | 2,200 | | 500 |
| 20..... | | 560 | | 340 | | 260 | | 5,250 | | 2,200 | | 500 |
| 21..... | | 560 | | 340 | | 700 | | 5,250 | | 2,200 | | 460 |
| 22..... | | 560 | | 340 | | 880 | | 4,200 | | 2,200 | | 460 |
| 23..... | | 560 | | 340 | | 880 | | 2,760 | | 2,300 | | 470 |
| 24..... | | 560 | | 340 | | 880 | | 2,760 | | 2,400 | | 420 |
| 25..... | | 560 | | 300 | | 950 | | 2,760 | | 2,550 | | 420 |
| 26..... | | 500 | | 260 | | 950 | | 2,280 | | 2,700 | | 360 |
| 27..... | | 460 | | 250 | | 950 | | 2,280 | | 3,000 | | 360 |
| 28..... | | 460 | | 240 | | 950 | | 2,400 | | 3,000 | | 340 |
| 29..... | | 400 | | 240 | | 1,650 | | 2,400 | | 2,990 | | 340 |
| 30..... | | 400 | | 240 | | 1,600 | | 2,400 | | 2,600 | | 380 |
| 31..... | | 400 | | 240 | | | | 2,500 | | | | 420 |

SHAWNIGAN CREEK (1025).

Location.—Five hundred feet from outlet of Shawnigan lake, upstream side of Esquimalt and Nanaimo Railway bridge, 300 yards from Koenigs station.

Records Available.—Gauge readings daily, May 11, 1914 to December 31, 1914.

Drainage Area.—Twenty-two square miles.

Gauge.—Six-foot enamel staff nailed to piling on left downstream side of highway bridge at outlet from lake.

Channel.—Straight for 50 feet on both sides of section; gravel and sand bed; one channel only.

Discharge Measurements.—One in 1913, Provincial Water Rights Branch; four in 1914, covering all stages.

Winter Flow.—Open all year.

Accuracy.—Between discharge of 0 and 280 cubic feet per second, accuracy

A. Above discharge of 280 cubic feet per second, accuracy B.

Co-operation.—Provincial Water Rights Branch.

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SHAWNIGAN CREEK (1025).

Shawnigan creek is the outlet of Shawnigan lake to the sea in Mill bay on Saanich inlet. It is some 4 miles in length. The drainage area above the metering section, which is located at the outlet of Shawnigan lake, is 22 square miles.

Shawnigan lake lies at an altitude of 381 feet and covers an area of 3 square miles. The Esquimalt and Nanaimo railway is located along the east shore, and the Canadian Northern railway along the west shore. There are several large sawmills located on Shawnigan lake. The lake is popular with the tourists, there being two hotels, and many fine summer homes along its shores.

The precipitation averages about 40 inches. July and August are dry months, and the water goes very low. In the summer of 1914 Shawnigan creek had no flow for several weeks.

The principal use for the water of this lake would be for municipal supply; with an impounding dam at its outlet, considerable water could be stored.

DISCHARGE MEASUREMENTS of Shawnigan River near Shawnigan Lake, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|----------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| May 11..... | C. E. Webb..... | 1057 | 19 | 41 | 0.6 | 1.71 | 25.2 ¹ |
| July 5..... | Webb and Cotton..... | 1057 | 18 | 11 | 0.3 | 1.05 | 3.3 ² |
| Aug. 8..... | C. P. Cotton..... | 1057 | 3 | 1 | 0.3 | 0.43 | 0.3 |
| Sept. 16..... | C. E. Webb..... | 1057 | ..... | ..... | ..... | 0.00 | 0.0 |
| Nov 24..... | "..... | 1933 | 32 | 98 | 2.5 | 4.33 | 245.0 |

¹ Station established. ² Several different sections used.

MONTHLY DISCHARGE of Shawnigan Creek near Shawnigan Lake, for 1914.

(Drainage area, 22 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June..... | 10.0 | 5.0 | 8.0 | 0.36 | 0.40 | 476 |
| July..... | 5.0 | 1.2 | 31.0 | 1.41 | 1.63 | 1,910 |
| August..... | 1.2 | 0.0 | 0.2 | 0.01 | 0.01 | 12 |
| September..... | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0 |
| October..... | 22.0 | 0.0 | 8.0 | 0.36 | 0.42 | 492 |
| November..... | 240.0 | 39.0 | 180.0 | 8.18 | 9.13 | 10,700 |
| December..... | 204.0 | 59.0 | 117.0 | 5.32 | 6.13 | 7,190 |

Accuracy "A."

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Shawnigan Creek at Shawnigan lake,
for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | October. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1.3 | 10 | 1.1 | 5.0 | 0.65 | 1.2 | | 0.0 | 0.0 | 0.0 |
| 2 | | | 1.3 | 10 | 1.1 | 5.0 | 0.5 | 0.6 | | 0.0 | 0.0 | 0.0 |
| 3 | | | 1.3 | 10 | 1.1 | 5.0 | 0.5 | 0.6 | | 0.0 | 0.0 | 0.0 |
| 4 | | | 1.3 | 10 | 1.1 | 5.0 | 0.5 | 0.6 | | 0.0 | 0.0 | 0.0 |
| 5 | | | 1.3 | 10 | 1.1 | 5.0 | 0.55 | 0.8 | | 0.0 | | 0.0 |
| 6 | | | 1.3 | 10 | 1.05 | 4.0 | 0.45 | 0.5 | | 0.0 | | 0.0 |
| 7 | | | 1.3 | 10 | 1.05 | 4.0 | 0.4 | 0.3 | | 0.0 | | 0.0 |
| 8 | | | 1.3 | 10 | 1.05 | 4.0 | 0.4 | 0.3 | | 0.0 | 0.0 | 0.0 |
| 9 | | | 1.3 | 10 | 1.0 | 3.0 | 0.4 | 0.3 | 0.0 | 0.0 | 0.05 | 0.0 |
| 10 | | | 1.3 | 10 | 1.0 | 3.0 | 0.4 | 0.3 | 0.0 | 0.0 | 0.10 | 0.0 |
| 11 | 1.7 | 24 | 1.3 | 10 | 1.0 | 3.0 | 0.35 | 0.2 | 0.0 | 0.0 | 0.20 | 0.1 |
| 12 | 1.7 | 24 | 1.3 | 10 | 1.0 | 3.0 | 0.30 | 0.2 | | 0.0 | 0.40 | 0.3 |
| 13 | 1.7 | 24 | 1.3 | 10 | 1.0 | 3.0 | 0.25 | 0.2 | | 0.0 | 0.4 | 0.3 |
| 14 | 1.65 | 22 | 1.25 | 9 | 1.0 | 3.0 | 0.2 | 0.1 | | 0.0 | 0.4 | 0.3 |
| 15 | 1.65 | 22 | 1.25 | 9 | 1.0 | 3.0 | 0.15 | 0.1 | | 0.0 | 0.5 | 0.6 |
| 16 | 1.6 | 20 | 1.25 | 8 | 1.05 | 4.0 | 0.15 | 0.1 | 0.0 | 0.0 | 0.6 | 1.0 |
| 17 | 1.6 | 20 | 1.2 | 7 | 1.05 | 4.0 | 0.10 | 0.0 | | 0.0 | 0.8 | 2.0 |
| 18 | 1.6 | 20 | 1.2 | 7 | 1.05 | 4.0 | 0.10 | 0.0 | | 0.0 | 1.0 | 3.0 |
| 19 | 1.55 | 18 | 1.2 | 7 | 0.9 | 2.5 | 0.05 | 0.0 | | 0.0 | 1.2 | 7.0 |
| 20 | 1.55 | 18 | 1.15 | 6 | 0.9 | 2.5 | 0.0 | 0.0 | | 0.0 | 1.4 | 13.0 |
| 21 | 1.5 | 16 | 1.15 | 6 | 0.85 | 2.3 | | 0.0 | 0.0 | 0.0 | 1.5 | 16.0 |
| 22 | 1.5 | 16 | 1.1 | 5 | 0.85 | 2.3 | | 0.0 | 0.0 | 0.0 | 1.55 | 18.0 |
| 23 | 1.5 | 16 | 1.1 | 5 | 0.8 | 2.0 | | 0.0 | | 0.0 | 1.6 | 20.0 |
| 24 | 1.45 | 15 | 1.1 | 5 | 0.8 | 2.0 | | 0.0 | | 0.0 | 1.6 | 20.0 |
| 25 | 1.45 | 15 | 1.1 | 5 | 0.8 | 2.0 | | 0.0 | | 0.0 | 1.6 | 20.0 |
| 26 | 1.45 | 15 | 1.1 | 5 | 0.75 | 1.8 | | 0.0 | 0.0 | 0.0 | 1.6 | 20.0 |
| 27 | 1.4 | 13 | 1.1 | 5 | 0.75 | 1.8 | | 0.0 | | 0.0 | 1.6 | 20.0 |
| 28 | 1.4 | 13 | 1.1 | 5 | 0.7 | 1.5 | | 0.0 | | 0.0 | 1.6 | 20.0 |
| 29 | 1.35 | 12 | 1.1 | 5 | 0.7 | 1.5 | | 0.0 | | 0.0 | 1.6 | 20.0 |
| 30 | 1.35 | 11 | 1.1 | 5 | 0.65 | 1.3 | | 0.0 | 0.0 | 0.0 | 1.6 | 20.0 |
| 31 | 1.3 | 10 | | | 0.65 | 1.2 | | 0.0 | | | 1.65 | 22.0 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Shawnigan Creek at Shawnigan lake,
for 1914.—*Con.*

| Day. | November. | | December. | |
|---------|---------------|------------|--------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2-00 | 39 | 4-50 | 264 |
| 2..... | 2-7 | 89 | 4-0 | 210 |
| 3..... | 2-8 | 97 | 3-8 | 190 |
| 4..... | 3-0 | 114 | 3-6 | 170 |
| 5..... | 3-1 | 123 | 3-4 | 150 |
| 6..... | 3-3 | 141 | 3-5 | 160 |
| 7..... | 3-4 | 150 | 3-6 | 170 |
| 8..... | 3-5 | 160 | 3-65 | 175 |
| 9..... | 3-5 | 160 | 3-5 | 160 |
| 10..... | 3-5 | 160 | 3-4 | 150 |
| 11..... | 3-55 | 165 | 3-3 | 141 |
| 12..... | 3-55 | 165 | 3-2 | 132 |
| 13..... | 3-65 | 175 | 3-15 | 128 |
| 14..... | 3-8 | 190 | 3-1 | 123 |
| 15..... | 3-8 | 190 | 3-05 | 118 |
| 16..... | 3-85 | 195 | 3-0 | 114 |
| 17..... | 3-9 | 200 | 2-9 | 105 |
| 18..... | 3-95 | 205 | 2-8 | 97 |
| 19..... | 4-0 | 210 | 2-7 | 89 |
| 20..... | 4-0 | 210 | 2-65 | 85 |
| 21..... | 4-0 | 210 | 2-5 | 73 |
| 22..... | 4-1 | 220 | 2-45 | 70 |
| 23..... | 4-2 | 230 | 2-4 | 66 |
| 24..... | 4-25 | 235 | 2-4 | 66 |
| 25..... | 4-3 | 240 | 2-3 | 59 |
| 26..... | 4-3 | 240 | 2-35 | 63 |
| 27..... | 4-3 | 240 | 2-3 | 59 |
| 28..... | 4-2 | 230 | 2-3 | 59 |
| 29..... | 4-1 | 220 | 2-3 | 59 |
| 30..... | 4-05 | 215 | 2-3 | 59 |
| 31..... | | | 2-3 | 59 |

SPROAT RIVER, VANCOUVER ISLAND, (1051).

Location.—Eight hundred feet below outlet from Sproat lake, 8 miles from Alberni.

Records Available.—Gauge readings four times a week; March 1, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to May 31, 1914, Provincial Water Rights Branch; June 1, 1914, to December 31, 1914.

Drainage Area.—One hundred and twenty-eight square miles.

Gauge.—Twelve-foot wooden staff nailed to crib on lake shore, 300 feet to right of outlet.

Channel.—Slight curve at section, straight for 500 feet above and below, gravel and boulder bed, solid rock on left side, good control, rapids and falls below section.

Discharge Measurements.—Six in 1913 by Provincial Water Rights Branch; four in 1914, covering all but highest stage.

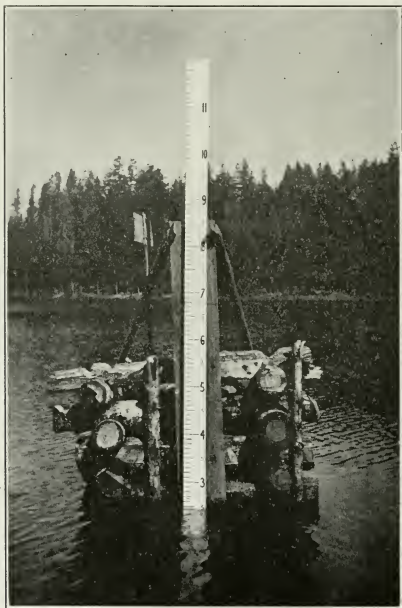
Winter Flow.—Open all winter.

Accuracy.—Between discharge of 700 and 2,100 cubic feet per second, accuracy A. Below discharge of 700 and above 2,100 cubic feet per second, accuracy B.

Co-operation.—Station established in 1913 by Provincial Water Rights Branch.

SPROAT RIVER (1051).

Sproat river is the outlet of Sproat lake, which lies at an altitude of about 80 feet. Sproat river flows in an easterly direction, and is some 3 miles in length. At its mouth it joins the Stamp river. The combined flow of these two streams is known as the Somass river, and is about 4 miles in length. The Somass river empties into the Alberni canal at Alberni.



Wooden Staff Gauge on Sproat lake near outlet, attached to rock filled crib.

The gauging station on Sproat river is located near the outlet from Sproat lake. The drainage area above station is 128 square miles. Sproat lake itself covers an area of 17 square miles.

This drainage is thickly timbered, except, of course, in the highest altitudes. The precipitation is heavy in this district. It varies from about 70 inches at mouth of Sproat river to 110 inches in mountains at headwaters in Clayoquot divide.

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Sproat river offers good possibilities for a hydro-electric development at falls, about half a mile from lake. The river drops 44 feet at this point, and in rapids below it drops another 15 feet in half a mile. It would be feasible to build an impounding dam at outlet from lake to raise water level of lake some 40 feet. By this means a head of nearly 100 feet might be obtained in a distance of 1 mile, and the regulation of the flow of stream.



Metering Section on Sproat river near outlet from Sproat lake.

Another larger development would be to bring water from Great Central lake, a distance of some $3\frac{1}{2}$ miles, by means of a tunnel and pipe line. A head of about 170 feet may be obtained.

DISCHARGE MEASUREMENTS of Sproat River near Sproat Lake, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity | Gauge Height. | Discharge. |
|----------|-----------------|-----------|--------|------------------|---------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec -ft |
| 1914. | | | | | | | |
| June 18. | Webb and Cotton | 1057 | 98 | 474 | 2.3 | 4.03 | 977 ¹ |
| July 30. | C. P. Cotton | 1057 | 86 | 308 | 1.4 | 2.48 | 435 |
| Sept 10. | C. E. Webb | 1057 | 77 | 212 | 0.8 | 1.43 | 160 |
| Dec. 12. | " | 1933 | 122 | 596 | 2.9 | 5.39 | 1 700 |

¹ Station established.

MONTHLY DISCHARGE of Sproat River at Sproat lake, for 1914.

(Drainage area, 128 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 5,900 | 1,750 | 3,470 | 27-10 | 31-20 | 213,000 | B |
| February..... | 1,840 | 960 | 1,260 | 9-85 | 10-26 | 70,000 | B |
| March..... | 3,370 | 1,750 | 2,360 | 18-40 | 21-20 | 145,000 | B |
| April..... | 4,560 | 1,720 | 2,950 | 23-02 | 25-68 | 176,000 | B |
| May..... | 2,100 | 1,200 | 1,540 | 12-05 | 13-89 | 94,700 | B |
| June..... | 1,206 | 830 | 985 | 7-69 | 8-58 | 58,600 | B |
| July..... | 820 | 440 | 625 | 4-88 | 5-63 | 38,400 | B |
| August..... | 420 | 200 | 295 | 2-30 | 2-65 | 18,100 | B |
| September..... | 680 | 160 | 355 | 2-77 | 3-09 | 21,100 | B |
| October..... | 8,100 | 610 | 3,440 | 26-90 | 31-00 | 212,000 | C |
| November..... | 5,600 | 2,440 | 4,120 | 32-20 | 35-90 | 245,000 | B |
| December..... | 4,230 | 740 | 1,650 | 12-90 | 14-90 | 101,000 | B |
| The year..... | 8,100 | 160 | 1,920 | 15-00 | 203-98 | 1,392,900 | B |

DAILY GAUGE HEIGHT AND DISCHARGE of Sproat River at Sproat Lake, for 1914.

| Day. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 3-65 | 820 | 2-4 | 420 | 1-52 | 200 | 3-25 | 680 | 7-48 | 3,350 | 8-3 | 4,230 |
| 2. | 3-64 | 820 | 2-35 | 400 | 1-5 | 190 | 3-3 | 690 | 7-89 | 3,780 | 7-91 | 3,800 |
| 3. | 3-5 | 760 | | 390 | | 190 | 3-29 | 680 | 8-1 | 4,000 | 7-55 | 3,400 |
| 4. | | 760 | 2-25 | 380 | 1-45 | 180 | 3-25 | 670 | 8-6 | 4,560 | 7-15 | 3,050 |
| 5. | | 770 | 2-23 | 370 | | 180 | | 660 | 8-4 | 4,340 | 6-8 | 2,730 |
| 6. | 3-55 | 780 | | 370 | 1-42 | 180 | 3-18 | 650 | 8-18 | 4,100 | 6-61 | 2,570 |
| 7. | | 750 | 2-21 | 360 | 1-41 | 170 | 3-12 | 640 | 8-66 | 4,600 | 6-4 | 2,400 |
| 8. | 3-42 | 730 | 2-21 | 350 | 1-5 | 190 | 3-03 | 620 | 9-25 | 5,300 | 6-18 | 2,220 |
| 9. | | 710 | | 360 | 1-45 | 180 | 3-02 | 610 | 9-49 | 5,570 | 5-95 | 2,050 |
| 10. | 3-3 | 690 | 2-2 | 360 | 1-45 | 180 | 3-08 | 610 | 9-02 | 5,000 | 5-75 | 1,930 |
| 11. | | 680 | 2-15 | 350 | | 180 | 3-05 | 620 | 8-78 | 4,760 | 5-57 | 1,800 |
| 12. | 3-21 | 660 | | 330 | 1-45 | 180 | 3-65 | 820 | 8-62 | 4,580 | 5-3 | 1,660 |
| 13. | 3-19 | 660 | 2-05 | 310 | 1-45 | 180 | 6-95 | 2,860 | 8-35 | 4,300 | 5-1 | 1,540 |
| 14. | 3-15 | 650 | 2-0 | 300 | | 180 | 8-6 | 4,560 | 8-0 | 3,900 | 4-95 | 1,450 |
| 15. | 3-1 | 630 | | 290 | 1-4 | 170 | 8-55 | 4,500 | 7-55 | 3,400 | 4-75 | 1,330 |
| 16. | 3-03 | 610 | 1-95 | 280 | 1-38 | 160 | 9-83 | 6,000 | 7-2 | 3,090 | 4-69 | 1,300 |
| 17. | 3-0 | 600 | 1-93 | 280 | 1-38 | 160 | 10-80 | 7,260 | 6-78 | 2,700 | 4-55 | 1,230 |
| 18. | 3-0 | 600 | 1-9 | 270 | 1-7 | 230 | 11-28 | 8,000 | 6-56 | 2,500 | 4-39 | 1,150 |
| 19. | 2-98 | 590 | 1-88 | 270 | 2-39 | 410 | 11-39 | 8,100 | 6-55 | 2,500 | 4-24 | 1,080 |
| 20. | 2-95 | 580 | | 260 | 3-1 | 630 | 11-39 | 8,100 | 6-45 | 2,440 | 4-2 | 1,050 |
| 21. | 2-9 | 570 | 1-8 | 250 | 3-15 | 650 | 11-00 | 7,500 | 6-58 | 2,540 | 4-05 | 990 |
| 22. | | 550 | | 250 | 3-1 | 630 | 10-20 | 6,500 | 7-07 | 3,000 | 3-97 | 950 |
| 23. | 2-8 | 540 | 1-8 | 250 | 3-05 | 610 | 9-50 | 5,600 | 7-67 | 3,550 | 3-87 | 900 |
| 24. | 2-72 | 510 | 1-76 | 240 | 3-02 | 600 | 9-11 | 5,100 | 8-8 | 4,780 | 3-8 | 880 |
| 25. | 2-71 | 510 | 1-68 | 220 | 2-95 | 580 | 8-5 | 4,450 | | 4,990 | 3-7 | 840 |
| 26. | 2-7 | 510 | | 220 | 2-98 | 590 | 7-98 | 3,900 | 9-25 | 5,300 | 3-62 | 810 |
| 27. | | 500 | 1-65 | 220 | 3-0 | 600 | 7-6 | 3,470 | 9-35 | 5,400 | 3-5 | 760 |
| 28. | 2-6 | 480 | | 220 | 3-2 | 660 | 7-42 | 3,300 | 9-5 | 5,600 | 3-45 | 740 |
| 29. | 2-55 | 470 | 1-6 | 210 | 3-29 | 680 | 7-2 | 3,090 | 8-88 | 4,970 | 3-45 | 740 |
| 30. | 2-5 | 450 | 1-58 | 200 | 3-28 | 680 | 7-25 | 3,130 | 8-65 | 4,600 | 3-49 | 750 |
| 31. | 2-45 | 440 | 1-55 | 200 | | | 7-35 | 3,220 | | | 3-5 | 760 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE OF SPROAT RIVER AT SPROAT LAKE, for 1914
—Con.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 2,000 | 5-5 | 1,780 | 6-9 | 2,820 | 5-4 | 1,720 | 6-0 | 2,100 | 4-5 | 1,200 |
| 2 | | 2,100 | 5-47 | 1,750 | | 2,860 | 5-4 | 1,720 | 5-8 | 1,960 | | 1,190 |
| 3 | 6-55 | 2,500 | 5-25 | 1,630 | 7-10 | 3,000 | 5-8 | 1,960 | 5-78 | 1,950 | 4-48 | 1,170 |
| 4 | 7-1 | 3,000 | | 1,550 | 7-5 | 3,370 | 6-2 | 2,240 | | 1,880 | | 1,150 |
| 5 | 8-42 | 4,350 | 5-0 | 1,480 | 7-1 | 3,000 | 6-9 | 2,820 | 5-52 | 1,800 | 4-35 | 1,130 |
| 6 | 9-75 | 5,900 | 4-85 | 1,400 | 6-85 | 2,770 | | 2,800 | | 1,780 | 4-31 | 1,110 |
| 7 | | 5,550 | 4-79 | 1,350 | 6-7 | 2,640 | 6-85 | 2,770 | 5-48 | 1,760 | | 1,080 |
| 8 | 9-2 | 5,220 | 4-65 | 1,270 | | 2,400 | | 2,600 | 5-48 | 1,760 | 4-25 | 1,070 |
| 9 | 8-6 | 4,560 | 4-57 | 1,230 | | 2,300 | 6-5 | 2,480 | | 1,710 | 4-2 | 1,050 |
| 10 | | 4,700 | 4-5 | 1,200 | 6-1 | 2,170 | 6-4 | 2,400 | 5-3 | 1,660 | | 1,030 |
| 11 | 8-89 | 4,980 | 4-42 | 1,160 | | 2,050 | | 2,300 | | 1,630 | 4-1 | 1,000 |
| 12 | 9-54 | 5,640 | 4-36 | 1,130 | 5-8 | 1,960 | 6-2 | 2,240 | 5-2 | 1,600 | 4-1 | 1,000 |
| 13 | | 5,300 | 4-28 | 1,090 | 6-1 | 2,170 | 6-6 | 2,560 | | 1,570 | 4-0 | 960 |
| 14 | 9-01 | 5,000 | 4-22 | 1,060 | 6-8 | 2,730 | 7-6 | 3,470 | 5-1 | 1,540 | | 960 |
| 15 | 8-75 | 4,700 | | 1,040 | 6-8 | 2,730 | | 3,570 | | 1,500 | 4-0 | 960 |
| 16 | 8-4 | 4,340 | | 1,000 | 6-7 | 2,640 | 7-8 | 3,680 | 5-0 | 1,480 | | 960 |
| 17 | 7-99 | 3,900 | | 1,000 | 6-65 | 2,600 | | 3,720 | 4-8 | 1,360 | | 970 |
| 18 | | 3,600 | | 1,000 | 6-6 | 2,560 | 7-9 | 3,790 | | 1,360 | 4-05 | 980 |
| 19 | 7-52 | 3,400 | | 1,000 | 6-5 | 2,480 | 8-6 | 4,560 | 4-8 | 1,360 | 4-0 | 960 |
| 20 | | 3,150 | | 1,000 | 6-5 | 2,480 | 8-4 | 4,340 | | 1,360 | 3-95 | 940 |
| 21 | 7-0 | 2,900 | | 980 | 6-4 | 2,400 | 8-0 | 3,900 | 4-8 | 1,360 | | 930 |
| 22 | 6-68 | 2,600 | | 980 | 6-3 | 2,320 | | 3,600 | | 1,360 | 3-88 | 910 |
| 23 | 6-41 | 2,400 | 4-0 | 960 | 6-1 | 2,170 | 7-5 | 3,370 | 4-8 | 1,360 | 3-85 | 900 |
| 24 | 6-29 | 2,200 | | 1,100 | 5-85 | 2,000 | | 3,470 | | 1,360 | | 890 |
| 25 | 6-1 | 2,170 | 4-6 | 1,250 | 5-75 | 1,930 | 7-7 | 3,570 | 4-8 | 1,360 | 3-8 | 880 |
| 26 | 5-98 | 2,100 | 5-0 | 1,480 | 5-7 | 1,900 | 7-7 | 3,570 | 4-8 | 1,360 | 3-77 | 860 |
| 27 | 5-75 | 1,930 | 5-3 | 1,660 | 5-7 | 1,900 | 6-98 | 2,820 | | 1,330 | | 850 |
| 28 | | 1,800 | 5-6 | 1,840 | 5-5 | 1,780 | 6-35 | 2,360 | 4-7 | 1,300 | 3-7 | 840 |
| 29 | 5-42 | 1,750 | | | | 1,760 | 6-05 | 2,130 | 4-65 | 1,270 | 3-7 | 840 |
| 30 | 5-75 | 1,930 | | | 5-45 | 1,750 | | 2,110 | 4-6 | 1,250 | 3-68 | 830 |
| 31 | | 1,850 | | | | 1,730 | | | 4-5 | 1,200 | | |

STAMP RIVER, VANCOUVER ISLAND (1052) AT GREAT CENTRAL LAKE.

Location.—Three hundred feet below outlet from Great Central lake, 16 miles from Alberni.

Records Available.—Gauge readings twice daily; February 20, 1913, to December 31, 1913, Provincial Water Rights Branch; January 1, 1914, to May 31, 1914, Provincial Water Rights Branch; June 1, 1914, to December 31, 1914.

Drainage Area.—One hundred and seventy-seven square miles.

Gauge.—Twelve-foot wooden staff nailed to crib in lake, 300 feet to right of outlet, near the "Ark."

Channel.—Straight for 300 feet above and 100 feet below; rocky bed, some boulders; one channel at all stages; at extreme high stage there is a discharge from slough 1,000 feet to right of stream.

Discharge Measurements.—Seven in 1913, Provincial Water Rights Branch; four in 1914, covering all but highest stages.

Winter Flow.—Open all winter.

Accuracy.—Between discharge of 90 and 6,000 cubic feet per second, accuracy B. Above discharge of 6,000 cubic feet per second, accuracy C.

Co-operation.—Station established by Provincial Water Rights Branch.

STAMP RIVER (1052) AT GREAT CENTRAL LAKE.

Stamp river is the outlet from Great Central lake, It flows in a northerly direction for a distance of about 3 miles, where it is entered on the left by the Ash river. From this point Stamp river flows south till it enters the Somass river, 4 miles from the Alberni Canal.

This gauging station is located on the river at outlet from Great Central lake. The gauge is situated in the lake close to head of river. The drainage area above gauging station is 177 square miles. Great Central lake covers an area of 19 square miles. It is about 270 feet above sea-level. Two good-sized mountain-fed streams—McBride creek and Drinkwater creek—enter the lake at the western end.

A hydro-electric development, giving a head of some 170 feet, is possible by the construction of a short tunnel through the divide between Great Central lake and Sproat lake, feeding a pipeline to a power-house located at Sproat lake. The total distance is about $3\frac{1}{2}$ miles.

The precipitation is high, varying from about 80 inches at head of river to over 120 inches in mountains at head of lake.

The drainage is thickly timbered except on the higher mountains.

DISCHARGE MEASUREMENTS of Stamp River near Great Central Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| 1914. | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 19..... | Webb & Cotton..... | 1057 | 140 | 680 | 2.9 | 4.00 | 1980 ¹ |
| July 30..... | C. P. Cotton..... | 1057 | 130 | 502 | 1.8 | 2.32 | 919 |
| Sept. 10..... | C. E. Webb..... | 1057 | 107 | 333 | 1.2 | 1.28 | 410 |
| Dec. 12..... | do..... | 1057 | 136 | 642 | 2.8 | 3.70 | 1,770 |

¹Station established.

MONTHLY DISCHARGE of Stamp River at Great Central Lake, for 1914.

(Drainage area, 177 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 4,850 | 1,820 | 3,208 | 18.12 | 20.90 | 197,000 | B |
| February..... | 1,870 | 900 | 1,240 | 7.01 | 7.30 | 68,900 | A |
| March..... | 2,760 | 1,900 | 2,436 | 13.75 | 15.85 | 150,000 | B |
| April..... | 4,820 | 2,030 | 3,316 | 18.72 | 20.90 | 197,000 | B |
| May..... | 2,540 | 2,050 | 2,317 | 13.08 | 15.08 | 143,000 | B |
| June..... | 2,070 | 1,700 | 1,848 | 10.44 | 11.65 | 110,000 | A |
| July..... | 1,750 | 890 | 1,368 | 7.73 | 8.91 | 84,200 | A |
| August..... | 850 | 450 | 437 | 3.60 | 4.15 | 39,200 | B |
| September..... | 1,310 | 340 | 707 | 4.00 | 4.46 | 42,100 | B |
| October..... | 8,300 | 1,010 | 3,793 | 21.42 | 24.70 | 233,000 | B |
| November..... | 5,370 | 2,570 | 4,113 | 23.24 | 25.95 | 245,000 | B |
| December..... | 4,200 | 720 | 1,731 | 9.78 | 11.28 | 106,000 | B |
| The year..... | 8,300 | 340 | 2,230 | 12.60 | 171.13 | 1,615,400 | B |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Great Central Lake,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-----------|---------------|------------|--------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge. | Gauge Height | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 3-76 | 1,820 | 3-74 | 1,800 | 4-20 | 2,130 | 4-27 | 2,180 | 4-61 | 2,460 | 4-04 | 2,020 |
| 2 | 3-8 | 1,850 | 3-62 | 1,750 | 4-60 | 2,450 | 4-66 | 2,030 | 4-71 | 2,540 | 4-1 | 2,060 |
| 3 | 4-24 | 2,170 | 3-51 | 1,650 | 4-76 | 2,570 | 4-24 | 2,160 | 4-7 | 2,530 | 4-1 | 2,070 |
| 4 | 5-39 | 3,100 | 3-39 | 1,560 | 4-87 | 2,660 | 4-58 | 2,430 | 4-67 | 2,500 | 4-69 | 2,050 |
| 5 | 6-24 | 3,900 | 3-28 | 1,480 | 4-78 | 2,600 | 4-83 | 2,640 | 4-54 | 2,400 | 3-99 | 1,980 |
| 6 | 6-91 | 4,600 | 3-12 | 1,380 | 4-6 | 2,450 | 5-35 | 3,070 | 4-41 | 2,300 | 3-89 | 1,910 |
| 7 | 6-87 | 4,550 | 3-0 | 1,300 | 4-49 | 2,360 | 5-47 | 3,180 | 4-39 | 2,280 | 3-79 | 1,840 |
| 8 | 6-67 | 4,330 | 2-92 | 1,250 | 4-36 | 2,270 | 5-38 | 3,100 | 4-46 | 2,330 | 3-75 | 1,800 |
| 9 | 6-35 | 4,000 | 3-83 | 1,870 | 4-28 | 2,200 | 5-29 | 3,020 | 4-49 | 2,360 | 3-69 | 1,770 |
| 10 | 6-13 | 3,800 | 2-78 | 1,150 | 4-08 | 2,050 | 5-24 | 2,980 | 4-49 | 2,360 | 3-66 | 1,750 |
| 11 | 6-58 | 4,200 | 2-7 | 1,120 | 3-97 | 1,970 | 5-2 | 2,940 | 4-48 | 2,350 | 3-62 | 1,720 |
| 12 | 7-13 | 4,850 | 2-66 | 1,100 | 3-88 | 1,900 | 5-19 | 2,930 | 4-5 | 2,370 | 3-61 | 1,710 |
| 13 | 7-05 | 4,750 | 2-54 | 1,030 | 3-95 | 1,960 | 5-38 | 3,100 | 4-49 | 2,360 | 3-66 | 1,750 |
| 14 | 6-76 | 4,400 | 2-49 | 1,000 | 4-68 | 2,500 | 6-2 | 3,850 | 4-48 | 2,350 | 3-75 | 1,800 |
| 15 | 6-79 | 4,140 | 2-49 | 1,000 | 4-98 | 2,750 | 6-86 | 4,550 | 4-48 | 2,350 | 3-86 | 1,890 |
| 16 | 6-29 | 3,900 | 2-45 | 970 | 4-99 | 2,760 | 6-86 | 4,550 | 4-42 | 2,300 | 3-9 | 1,920 |
| 17 | 5-95 | 3,600 | 2-42 | 950 | 4-94 | 2,730 | 6-66 | 4,320 | 4-38 | 2,270 | 3-94 | 1,950 |
| 18 | 5-78 | 3,450 | 2-4 | 940 | 4-93 | 2,720 | 6-73 | 4,400 | 4-3 | 2,210 | 3-99 | 1,980 |
| 19 | 5-52 | 3,250 | 2-38 | 930 | 4-88 | 2,670 | 7-1 | 4,820 | 4-26 | 2,170 | 4-01 | 2,000 |
| 20 | 5-3 | 3,030 | 2-34 | 900 | 4-88 | 2,670 | 6-98 | 4,680 | 4-22 | 2,150 | 3-98 | 1,970 |
| 21 | 5-06 | 2,800 | 2-39 | 930 | 4-92 | 2,620 | 6-79 | 4,470 | 4-27 | 2,190 | 3-88 | 1,900 |
| 22 | 5-85 | 3,500 | 2-4 | 940 | 4-97 | 2,750 | 6-38 | 4,030 | 4-3 | 2,210 | 3-76 | 1,800 |
| 23 | 5-57 | 3,300 | 2-53 | 1,020 | 4-96 | 2,750 | 5-95 | 3,600 | 4-4 | 2,290 | 3-67 | 1,750 |
| 24 | 4-38 | 2,250 | 2-73 | 1,140 | 4-88 | 2,670 | 5-67 | 3,370 | 4-52 | 2,400 | 3-65 | 1,740 |
| 25 | 4-28 | 2,200 | 2-8 | 1,180 | 4-78 | 2,600 | 5-44 | 3,160 | 4-58 | 2,430 | 3-64 | 1,730 |
| 26 | 4-27 | 2,200 | 2-93 | 1,250 | 4-71 | 2,540 | 5-23 | 2,970 | 4-6 | 2,450 | 3-62 | 1,720 |
| 27 | 4-03 | 2,000 | 3-25 | 1,460 | 4-58 | 2,430 | 5-22 | 2,960 | 4-5 | 2,370 | 3-65 | 1,740 |
| 28 | 3-87 | 1,900 | 3-53 | 1,670 | 4-39 | 2,280 | 5-02 | 2,800 | 4-32 | 2,230 | 3-61 | 1,720 |
| 29 | 3-83 | 1,880 | ..... | ..... | 4-24 | 2,170 | 4-83 | 2,640 | 4-26 | 2,170 | 3-58 | 1,700 |
| 30 | 3-81 | 1,860 | ..... | ..... | 4-25 | 2,160 | 4-73 | 2,550 | 4-18 | 2,110 | 3-6 | 1,710 |
| 31 | 3-8 | 1,850 | ..... | ..... | 4-29 | 2,200 | ..... | ..... | 4-08 | 2,050 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Great Central Lake,
for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 3-58 | 1,700 | 2-25 | 850 | 1-37 | 440 | 2-96 | 1,270 | 6-0 | 3,660 | 6-54 | 4,200 |
| 2 | 3-61 | 1,720 | 2-19 | 820 | 1-32 | 420 | 3-00 | 1,300 | 6-14 | 3,800 | 6-19 | 3,840 |
| 3 | 3-67 | 1,750 | 2-13 | 800 | 1-3 | 410 | 2-96 | 1,270 | 6-31 | 3,960 | 5-89 | 3,560 |
| 4 | 3-67 | 1,750 | 2-1 | 780 | 1-26 | 390 | 2-88 | 1,230 | 6-58 | 4,240 | 5-56 | 3,260 |
| 5 | 3-67 | 1,750 | 2-07 | 750 | 1-22 | 380 | 2-83 | 1,200 | 6-51 | 4,160 | 5-23 | 2,970 |
| 6 | 3-64 | 1,750 | 2-1 | 780 | 1-2 | 370 | 2-72 | 1,130 | 6-28 | 3,920 | 5-0 | 2,770 |
| 7 | 3-54 | 1,670 | 2-07 | 750 | 1-22 | 380 | 2-66 | 1,100 | 6-01 | 3,670 | 4-76 | 2,580 |
| 8 | 3-43 | 1,600 | 2-06 | 750 | 1-26 | 390 | 2-59 | 1,050 | 7-19 | 4,930 | 4-56 | 2,400 |
| 9 | 3-32 | 1,520 | 2-07 | 750 | 1-21 | 370 | 2-54 | 1,020 | 7-57 | 5,370 | 4-28 | 2,200 |
| 10 | 3-35 | 1,530 | 2-01 | 740 | 1-22 | 380 | 2-51 | 1,010 | 7-53 | 5,340 | 4-1 | 2,060 |
| 11 | 3-31 | 1,510 | 1-99 | 720 | 1-25 | 390 | 2-51 | 1,010 | 7-42 | 5,200 | 3-93 | 1,950 |
| 12 | 3-24 | 1,470 | 1-87 | 710 | 1-19 | 370 | 3-1 | 1,360 | 7-05 | 4,760 | 3-74 | 1,820 |
| 13 | 3-19 | 1,420 | 1-85 | 700 | 1-17 | 360 | 5-98 | 3,650 | 6-71 | 4,380 | 3-54 | 1,670 |
| 14 | 3-1 | 1,360 | 1-9 | 680 | 1-09 | 340 | 7-51 | 5,300 | 6-34 | 4,000 | 3-4 | 1,570 |
| 15 | 3-17 | 1,400 | 1-87 | 660 | 1-10 | 340 | 7-44 | 5,210 | 5-9 | 3,570 | 3-23 | 1,450 |
| 16 | 3-15 | 1,390 | 1-83 | 650 | 1-14 | 350 | 8-48 | 6,630 | 5-55 | 3,250 | 3-13 | 1,380 |
| 17 | 3-10 | 1,360 | 1-8 | 630 | 1-18 | 370 | 9-42 | 7,960 | 5-39 | 3,110 | 3-0 | 1,300 |
| 18 | 3-09 | 1,350 | 1-78 | 610 | 1-39 | 440 | 9-67 | 8,300 | 4-74 | 2,570 | 2-83 | 1,200 |
| 19 | 3-07 | 1,340 | 1-76 | 600 | 2-32 | 900 | 9-56 | 8,150 | 4-82 | 2,630 | 2-78 | 1,170 |
| 20 | 3-04 | 1,330 | 1-71 | 590 | 2-9 | 1,240 | 9-56 | 8,150 | 4-86 | 2,660 | 2-71 | 1,130 |
| 21 | 2-99 | 1,300 | 1-69 | 580 | 2-94 | 1,260 | 9-1 | 7,500 | 4-86 | 2,660 | 2-6 | 1,060 |
| 22 | 2-92 | 1,250 | 1-61 | 540 | 2-9 | 1,240 | 8-51 | 6,650 | 5-58 | 3,280 | 2-58 | 1,050 |
| 23 | 2-83 | 1,200 | 1-58 | 510 | 2-86 | 1,200 | 7-86 | 5,760 | 5-91 | 3,580 | 2-44 | 960 |
| 24 | 2-76 | 1,150 | 1-58 | 510 | 2-8 | 1,180 | 7-28 | 5,060 | 6-72 | 4,400 | 2-3 | 880 |
| 25 | 2-71 | 1,130 | 1-52 | 500 | 2-76 | 1,150 | 6-76 | 4,440 | 7-41 | 5,200 | 2-1 | 780 |
| 26 | 2-6 | 1,060 | 1-5 | 490 | 2-7 | 1,120 | 6-39 | 4,040 | 7-54 | 5,360 | 2-08 | 770 |
| 27 | 2-54 | 1,020 | 1-48 | 480 | 2-82 | 1,200 | 5-99 | 3,650 | 7-54 | 5,360 | 2-08 | 770 |
| 28 | 2-44 | 960 | 1-46 | 470 | 2-9 | 1,240 | 5-63 | 3,330 | 7-36 | 5,130 | 2-07 | 760 |
| 29 | 2-34 | 900 | 1-41 | 450 | 3-02 | 1,310 | 5-37 | 3,100 | 7-09 | 4,800 | 1-99 | 720 |
| 30 | 2-33 | 900 | 1-43 | 460 | 2-98 | 1,300 | 5-51 | 3,220 | 6-78 | 4,450 | 2-09 | 770 |
| 31 | 2-3 | 880 | 1-4 | 450 | ..... | ..... | 5-92 | 3,600 | ..... | ..... | 2-11 | 780 |

STAMP RIVER, VANCOUVER ISLAND (1053), AT STAMP FALLS.

Location.—One-quarter mile above falls; 8 miles from Alberni on Beaver Creek road.

Records available.—Gauge readings daily, March, 1913, to December 31, 1913, Messrs. Ritchie, Agnew Co., Engineers, Victoria; January 1, 1914, to May 31, 1914, Messrs. Ritchie, Agnew Co., Engineers, Victoria; June 1, 1914, to December 31, 1914.

Drainage area.—Three hundred and thirty-six square miles.

Gauge.—Fourteen-foot wooden staff on left bank 80 feet below measuring section.

Channel.—Straight for 600 feet above section and for 300 feet below. Rock bed with gravel. Good control.

Discharge measurements.—Measurements in 1913 by Messrs. Ritchie, Agnew Co.; measurements in 1914 by Messrs. Ritchie, Agnew Co.; three measurements in 1914 covering all but high stage.

Winter flow.—Open all winter.

Co-operation.—Station established in 1913 by Messrs. Ritchie, Agnew Co.

SESSIONAL PAPER No. 25e

STAMP RIVER (1053).

This metering station is located on Stamp river about a quarter of a mile above Stamp falls. Stamp falls are some 3 miles above the junction of the Stamp and Sproat rivers.

At Stamp falls the river has the combined flow of the Ash river and Stamp river from Great Central lake. The drainage area above metering section is 336 square miles. The precipitation varies from about 70 inches at falls to over 100 inches at headwaters.

The Ritchie Agnew Power Company have made extensive surveys and obtained considerable stream data in this locality. It is understood they intend to install a hydro-electric plant at Stamp falls to develop 35,000 horse-power. A head of 110 feet may be obtained by the erection of a dam above the falls.

The towns of Alberni and Port Alberni are about 10 and 12 miles distant respectively, from Stamp falls.

DISCHARGE MEASUREMENTS of Stamp River near Stamp Falls, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| June 22..... | Webb & Cotton..... | 1,057 | 155 | 1,130 | 2.3 | 2.48 | 2,630 ¹ |
| July 31..... | C. P. Cotton..... | 1,057 | 150 | 944 | 1.2 | 1.40 | 1,130 |
| Sept. 11..... | C. E. Webb..... | 1,057 | 141 | 750 | 0.7 | 0.60 | 500 |

¹Station established.

MONTHLY DISCHARGE of Stamp River at Stamp Falls, for 1914.

(Drainage area, 336 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June..... | 3,190 | 2,200 | 2,630 | 7.8 | 8.7 | 157,000 | B |
| July..... | 2,510 | 1,040 | 1,840 | 5.5 | 6.3 | 113,000 | B |
| August..... | 1,040 | 560 | 830 | 2.5 | 2.9 | 51,000 | B |
| September..... | 1,930 | 410 | 1,070 | 3.2 | 3.6 | 63,700 | B |
| October..... | 15,100 | 1,340 | 5,980 | 17.8 | 20.5 | 358,000 | C |
| November..... | 14,400 | 1,930 | 7,440 | 22.1 | 24.7 | 443,000 | C |
| December.. | 5,530 | 880 | 2,100 | 6.3 | 7.3 | 129,000 | B |

NOTE.—Discharge measurements supplied by Messrs. Ritchie, Agnew Co., of Victoria, B.C.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Falls, for 1914.

| DAY. | June. | | July. | | August. | | September. | | October. | | November. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 3-0 | 3,190 | 2-6 | 2,510 | 1-4 | 1,040 | 0-7 | 560 | 1-9 | 1,560 | 4-6 | 7,540 |
| 2 | 3-0 | 3,190 | 2-6 | 2,510 | 1-4 | 1,040 | 0-7 | 560 | 1-8 | 1,450 | 4-6 | 7,540 |
| 3 | 2-9 | 3,020 | 2-6 | 2,510 | 1-3 | 960 | 0-6 | 510 | 1-8 | 1,450 | 4-75 | 8,110 |
| 4 | 2-8 | 2,850 | 2-5 | 2,340 | 1-3 | 960 | 0-6 | 510 | 1-9 | 1,560 | 5-1 | 9,520 |
| 5 | 2-7 | 2,680 | 2-5 | 2,340 | 1-2 | 880 | 0-5 | 460 | 1-9 | 1,560 | 4-7 | 7,920 |
| 6 | 2-6 | 2,510 | 2-5 | 2,340 | 1-2 | 880 | 0-4 | 410 | 1-9 | 1,560 | 4-1 | 5,800 |
| 7 | 2-6 | 2,510 | 2-3 | 2,060 | 1-2 | 880 | 0-4 | 410 | 1-8 | 1,450 | 4-0 | 5,530 |
| 8 | 2-5 | 2,340 | 2-3 | 2,060 | 1-2 | 880 | 0-4 | 410 | 1-8 | 1,450 | 5-4 | 10,800 |
| 9 | 2-4 | 2,200 | 2-3 | 2,060 | 1-3 | 960 | 0-6 | 510 | 1-7 | 1,340 | 6-25 | 14,400 |
| 10 | 2-4 | 2,200 | 2-3 | 2,060 | 1-4 | 1,040 | 0-6 | 510 | 1-7 | 1,340 | 5-4 | 10,800 |
| 11 | 2-5 | 2,340 | 2-2 | 1,930 | 1-3 | 960 | 0-6 | 510 | 1-7 | 1,340 | 5-1 | 9,520 |
| 12 | 2-6 | 2,510 | 2-2 | 1,930 | 1-2 | 880 | 0-6 | 510 | 3-6 | 4,490 | 4-6 | 7,540 |
| 13 | 2-6 | 2,510 | 2-2 | 1,930 | 1-2 | 880 | 0-9 | 660 | 5-1 | 9,520 | 4-2 | 6,100 |
| 14 | 2-6 | 2,510 | 2-3 | 2,060 | 1-2 | 880 | 0-9 | 660 | 6-0 | 13,400 | 3-75 | 4,880 |
| 15 | 2-8 | 2,850 | 2-3 | 2,060 | 1-2 | 880 | 1-0 | 720 | 6-4 | 15,100 | 3-5 | 4,240 |
| 16 | 2-8 | 2,850 | 2-2 | 1,930 | 1-2 | 880 | 1-3 | 960 | 6-4 | 15,100 | 3-3 | 3,800 |
| 17 | 2-9 | 3,020 | 2-1 | 1,800 | 1-2 | 880 | 1-1 | 800 | 6-1 | 13,800 | 3-1 | 3,390 |
| 18 | 3-0 | 3,190 | 2-1 | 1,800 | 1-2 | 880 | 2-0 | 1,670 | 5-8 | 12,500 | 2-2 | 1,930 |
| 19 | 3-0 | 3,190 | 2-1 | 1,800 | 1-2 | 880 | 2-0 | 1,670 | 5-6 | 11,700 | 2-25 | 2,000 |
| 20 | 2-8 | 2,850 | 2-0 | 1,670 | 1-1 | 800 | 2-0 | 1,670 | 5-4 | 10,800 | 3-2 | 3,590 |
| 21 | 2-7 | 2,680 | 2-0 | 1,670 | 1-1 | 800 | 2-2 | 1,930 | 5-3 | 10,400 | 3-25 | 3,700 |
| 22 | 2-5 | 2,340 | 2-0 | 1,670 | 1-1 | 800 | 2-2 | 1,930 | 4-8 | 8,320 | 4-2 | 6,100 |
| 23 | 2-5 | 2,340 | 1-9 | 1,560 | 1-1 | 800 | 2-1 | 1,800 | 4-7 | 7,920 | 4-8 | 8,320 |
| 24 | 2-5 | 2,340 | 1-8 | 1,450 | 0-9 | 660 | 2-0 | 1,670 | 4-5 | 7,160 | 5-3 | 10,400 |
| 25 | 2-6 | 2,510 | 1-8 | 1,450 | 0-9 | 660 | 2-0 | 1,670 | 4-0 | 5,530 | 5-6 | 11,700 |
| 26 | 2-6 | 2,510 | 1-8 | 1,450 | 0-9 | 660 | 2-0 | 1,670 | 3-7 | 4,750 | 5-8 | 12,500 |
| 27 | 2-5 | 2,340 | 1-8 | 1,450 | 0-9 | 660 | 2-0 | 1,670 | 3-5 | 4,240 | 5-25 | 10,160 |
| 28 | 2-5 | 2,340 | 1-7 | 1,340 | 0-9 | 660 | 2-1 | 1,800 | 3-25 | 3,700 | 5-4 | 10,800 |
| 29 | 2-5 | 2,340 | 1-6 | 1,230 | 0-8 | 610 | 2-1 | 1,800 | 3-05 | 3,290 | 4-75 | 8,110 |
| 30 | 2-6 | 2,510 | 1-5 | 1,130 | 0-8 | 610 | 1-9 | 1,560 | 3-30 | 3,800 | 4-3 | 6,420 |
| 31 | | | 1-4 | 1,040 | 0-7 | 560 | | | 3-30 | 3,800 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Stamp River at Falls, for 1914—*Con.*

| DAY. | December. | |
|------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1 | 4.0 | 5,530 |
| 2 | 3.8 | 5,010 |
| 3 | 3.6 | 4,490 |
| 4 | 3.4 | 4,020 |
| 5 | 3.2 | 3,590 |
| 6 | 3.0 | 3,190 |
| 7 | 2.8 | 2,850 |
| 8 | 2.7 | 2,680 |
| 9 | 2.6 | 2,510 |
| 10 | 2.45 | 2,270 |
| 11 | 2.35 | 2,130 |
| 12 | 2.20 | 1,930 |
| 13 | 2.10 | 1,800 |
| 14 | 2.00 | 1,670 |
| 15 | 1.8 | 1,450 |
| 16 | 1.8 | 1,450 |
| 17 | 1.8 | 1,450 |
| 18 | 1.7 | 1,340 |
| 19 | 1.6 | 1,230 |
| 20 | 1.6 | 1,230 |
| 21 | 1.6 | 1,230 |
| 22 | 1.5 | 1,130 |
| 23 | 1.5 | 1,130 |
| 24 | 1.4 | 1,040 |
| 25 | 1.4 | 1,040 |
| 26 | 1.2 | 880 |
| 27 | 1.2 | 880 |
| 28 | 1.2 | 880 |
| 29 | 1.6 | 1,230 |
| 30 | 1.8 | 1,450 |
| 31 | 2.5 | 2,340 |

TSOLUM RIVER, VANCOUVER ISLAND, (1039).

Location.—Upstream side of footbridge, 2 miles from Sandwick.

Records available.—Gauge readings twice daily, May 31, 1914, to December 31, 1914.

Drainage area.—One hundred and fifty square miles.

Gauge.—Twelve-foot enamel staff, 20 feet downstream from bridge, right bank.

Channel.—Straight for 500 feet above and 300 feet below section; gravel bed; good control; stream confined in cribbing, both banks, in high water.

Discharge measurements.—One in 1912, Provincial Water Rights Branch; one in 1913, Provincial Water Rights Branch; four in 1914, covering all but high stage.

Winter flow.—Open all winter.

Accuracy.—B.

Co-operation.—Gauge installed by Provincial Water Rights Branch in 1912.

TSOLUM RIVER (1039).

Tsolum river rises in the mountains on the east coast, and flows in a southeasterly direction to its mouth in Comox harbour at Courtenay. It is some 20 miles in length, and has a drainage area of 150 square miles above the gauging station, which is located about 2 miles from mouth.

The precipitation varies from about 70 inches at mouth to 90 inches in mountains at headwaters. Wolfe lake, covering an area of about 1 square mile, drains into the Tsolum river about 7 miles from mouth.

The flow of Tsolum river has a large range. Having practically no storage, it is very flashy. From the records available for 1914 it shows a minimum discharge of 3 cubic feet per second on September 4 to a maximum of 2,100 cubic feet per second on September 18. The gauge was washed out during a freshet in October, but was replaced at the first opportunity.

A large proportion of the lower valley of the river is under cultivation. Dairying has been encouraged by the installation of a cream condenser at Courtenay, which takes all the milk available.

DISCHARGE MEASUREMENTS of Tsolum River near Sandwick B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|--------------------|-----------|--------|------------------|----------------|---------------|------------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 31..... | Webb & Cotton..... | 1057 | 65 | 127 | 1.4 | 3.78 | 171 ¹ |
| July 17..... | C. P. Cotton..... | 1057 | 64 | 98 | 0.6 | 3.28 | 60 |
| Sept. 8..... | C. E. Webb..... | 1057 | 6 | 2 | 0.9 | 2.58 | 1.8 ² |
| Nov. 10..... | do..... | 1057 | 98 | 291 | 3.0 | 5.30 | 882 |

¹ Station established.

² Low-water section.

MONTHLY DISCHARGE of Tsolum River three miles from mouth, for 1914.

(Drainage area, 150 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June..... | 520 | 95 | 230 | 1.53 | 1.71 | 13,700 |
| July..... | 195 | 18 | 63 | 0.42 | 0.48 | 3,870 |
| August..... | 28 | 4 | 11 | 0.07 | 0.08 | 675 |
| September..... | 2,100 | 3 | 310 | 2.06 | 2.30 | 18,400 |
| October..... | | | | | | |
| November..... | 1,330 | 280 | 875 | 5.83 | 6.50 | 52,100 |
| December..... | 900 | 115 | 375 | 2.50 | 2.88 | 23,100 |

Accuracy "B".

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Tsolum River three miles from mouth,
for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | October. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 4.0 | 260 | 3.85 | 195 | 2.9 | 18 | 2.6 | 4 | 3.65 | 130 |
| 2 | | | 4.1 | 300 | 3.75 | 160 | 2.9 | 18 | 2.6 | 4 | 3.9 | 215 |
| 3 | | | 4.1 | 300 | 3.7 | 145 | 2.9 | 18 | 2.6 | 4 | 3.8 | 175 |
| 4 | | | 3.95 | 230 | 3.55 | 105 | 2.85 | 15 | 2.55 | 3 | 3.7 | 145 |
| 5 | | | 3.75 | 160 | 3.5 | 95 | 2.8 | 12 | 2.5 | 3 | 3.7 | 145 |
| 6 | | | 3.65 | 130 | 3.45 | 85 | 2.8 | 12 | 2.5 | 3 | 3.7 | 145 |
| 7 | | | 3.75 | 160 | 3.4 | 75 | 2.8 | 12 | 2.65 | 6 | 3.6 | 115 |
| 8 | | | 4.15 | 320 | 3.4 | 75 | 3.0 | 28 | 2.7 | 8 | 3.6 | 115 |
| 9 | | | 3.8 | 175 | 3.4 | 75 | 2.95 | 23 | 2.8 | 12 | 3.6 | 115 |
| 10 | | | 4.0 | 260 | 3.4 | 75 | 2.9 | 18 | 2.8 | 12 | 3.7 | 145 |
| 11 | | | 4.0 | 260 | 3.4 | 75 | 2.9 | 18 | 2.8 | 12 | 3.7 | 145 |
| 12 | | | 4.0 | 260 | 3.4 | 75 | 2.85 | 15 | 2.8 | 12 | 6.45 | 1,430 |
| 13 | | | 4.05 | 280 | 3.4 | 75 | 2.8 | 12 | 2.8 | 12 | | |
| 14 | | | 4.0 | 260 | 3.35 | 68 | 2.8 | 12 | 2.8 | 12 | | |
| 15 | | | 4.15 | 320 | 3.25 | 54 | 2.8 | 12 | 3.15 | 43 | | |
| 16 | | | 4.3 | 400 | 3.2 | 48 | 2.8 | 12 | 3.75 | 160 | | |
| 17 | | | 4.15 | 320 | 3.25 | 54 | 2.75 | 10 | 4.25 | 370 | | |
| 18 | | | 3.85 | 195 | 3.2 | 48 | 2.7 | 8 | 7.8 | 2,100 | | |
| 19 | | | 3.65 | 130 | 3.2 | 48 | 2.7 | 8 | 7.25 | 1,820 | | |
| 20 | | | 3.6 | 115 | 3.2 | 48 | 2.7 | 8 | 6.2 | 1,310 | | |
| 21 | | | 3.65 | 130 | 3.1 | 38 | 2.7 | 8 | 5.8 | 1,120 | | |
| 22 | | | 3.65 | 130 | 3.0 | 28 | 2.7 | 8 | 4.9 | 690 | | |
| 23 | | | 3.5 | 95 | 3.0 | 28 | 2.7 | 8 | 4.25 | 370 | | |
| 24 | | | 3.75 | 160 | 3.0 | 28 | 2.7 | 8 | 4.0 | 260 | | |
| 25 | | | 4.55 | 520 | 3.0 | 28 | 2.7 | 8 | 3.75 | 160 | 4.3 | 400 |
| 26 | | | 4.1 | 300 | 3.0 | 28 | 2.6 | 4 | 3.75 | 160 | 4.2 | 350 |
| 27 | | | 4.0 | 260 | 3.0 | 28 | 2.6 | 4 | 3.85 | 195 | 4.1 | 300 |
| 28 | | | 3.85 | 195 | 2.95 | 23 | 2.6 | 4 | 3.85 | 195 | 4.0 | 260 |
| 29 | | | 3.7 | 145 | 2.9 | 18 | 2.6 | 4 | 3.7 | 145 | 3.9 | 215 |
| 30 | | | 3.7 | 145 | 2.9 | 18 | 2.6 | 4 | | 140 | 4.0 | 260 |
| 31 | 3.8 | 176 | | | 2.9 | 18 | 2.6 | 4 | | | 4.3 | 400 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE OF Tsolum River three miles from mouth,
for 1914—*Con.*

| DAY. | November. | | December. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 5-0 | 740 | 5-35 | 900 |
| 2..... | 5-2 | 830 | 5-0 | 740 |
| 3..... | 5-35 | 900 | 4-9 | 690 |
| 4..... | 5-35 | 900 | 4-8 | 640 |
| 5..... | 5-35 | 900 | 4-8 | 640 |
| 6..... | 4-9 | 690 | 4-9 | 690 |
| 7..... | 5-05 | 760 | 5-0 | 740 |
| 8..... | 5-75 | 1,100 | 5-0 | 740 |
| 9..... | 6-15 | 1,280 | 4-9 | 690 |
| 10..... | 5-8 | 1,120 | 4-7 | 590 |
| 11..... | 5-35 | 900 | 4-35 | 420 |
| 12..... | 4-95 | 710 | 4-0 | 260 |
| 13..... | 4-6 | 540 | 4-0 | 260 |
| 14..... | 4-5 | 500 | 3-9 | 215 |
| 15..... | 4-45 | 470 | 3-9 | 215 |
| 16..... | 4-35 | 420 | 3-9 | 215 |
| 17..... | 4-2 | 350 | 3-9 | 215 |
| 18..... | 4-05 | 280 | 3-9 | 215 |
| 19..... | 4-45 | 470 | 3-8 | 175 |
| 20..... | 4-85 | 660 | 3-8 | 175 |
| 21..... | 5-8 | 1,120 | 3-8 | 175 |
| 22..... | 6-4 | 1,410 | 3-8 | 175 |
| 23..... | 6-1 | 1,260 | 3-8 | 175 |
| 24..... | 5-9 | 1,170 | 3-8 | 175 |
| 25..... | 6-0 | 1,220 | 3-7 | 145 |
| 26..... | 6-0 | 1,220 | 3-6 | 115 |
| 27..... | 5-85 | 1,150 | 3-6 | 115 |
| 28..... | 6-25 | 1,330 | 3-6 | 115 |
| 29..... | 5-5 | 980 | 3-7 | 145 |
| 30..... | 5-3 | 880 | 3-9 | 215 |
| 31..... | ..... | ..... | 4-7 | 590 |

BRIDGE RIVER (1045).

Location.—Highway bridge on road to Bridge river from Mission on Seton lake. Ten miles from Mission.

Records available.—Daily discharges, October 7 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—The 1912 provincial map (scale 17.75 miles to 1 inch) shows a drainage area of 2,400 miles for the whole stream. About 1,900 miles of this is above the gauging station, which is near the site of the intake for the proposed hydro-electric plant.

Channel.—Wide and deep, sand and mud bottom, an excellent measuring section.

Discharge measurements.—Seven meter measurements were taken during 1913 and 1914. The rating curve is well defined.

Winter flow.—The stream is open all winter.

Accuracy.—A good rating curve and gauge readings twice a day, should give very accurate results, "A".

Co-operation.—Readings taken in co-operation with Bridge River Power Company.

SESSIONAL PAPER No. 25e

DISCHARGE MEASUREMENTS of Bridge River 30 miles from mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Oct. 7..... | Cline & Keys..... | 1,057 | 156 | 1,050 | 1.8 | 2.38 | 1,890 ¹ |
| 1914. | | | | | | | |
| April 17..... | H. J. E. Keys..... | 1,046 | 156 | 912 | 2.05 | 2.25 | 1,865 |
| " 19..... | "..... | 1,046 | 156 | 932 | 2.25 | 2.43 | 2,101 |
| June 9..... | Keys & Hughes..... | 1,046 | 156 | 1,422 | 3.56 | 4.75 | 5,130 |
| " 20..... | H. C. Hughes..... | 1,046 | 156 | 2,120 | 5.54 | 8.10 | 11,750 |
| Aug. 3..... | "..... | 1,046 | 156 | 1,826 | 4.83 | 6.80 | 8,820 |
| Sept. 21..... | "..... | 1,046 | 156 | 1,044 | 1.97 | 2.55 | 2,060 |

¹Station established.

MONTHLY DISCHARGE of Bridge River 30 miles from mouth, for 1914.

(Drainage area, 1,900 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 860 | 520 | 667 | 0.35 | 0.40 | 41,000 | A |
| February..... | 580 | 580 | 580 | 0.30 | 0.31 | 32,200 | A |
| March..... | 1,110 | 580 | 766 | 0.40 | 0.46 | 47,100 | A |
| April..... | 2,140 | 790 | 1,620 | 0.85 | 0.95 | 96,400 | A |
| May..... | 9,900 | 2,400 | 5,530 | 2.91 | 3.36 | 340,000 | A |
| June..... | 18,800 | 5,100 | 9,180 | 4.83 | 5.40 | 546,000 | C |
| July..... | 14,900 | 6,400 | 12,200 | 6.42 | 7.40 | 750,000 | C |
| August..... | 9,200 | 5,300 | 7,760 | 4.08 | 4.70 | 477,000 | A |
| September..... | 5,700 | 2,100 | 3,520 | 1.85 | 2.06 | 209,000 | A |
| October..... | 11,100 | 2,000 | 3,790 | 1.99 | 2.29 | 233,000 | A |
| November..... | 3,650 | 1,570 | 2,010 | 1.06 | 1.18 | 120,000 | A |
| December..... | 2,970 | 720 | 1,770 | 0.93 | 1.07 | 109,000 | A |
| The year..... | 18,800 | 520 | 4,116 | 2.17 | 29.58 | 3,000,700 | B |

DAILY GAUGE HEIGHT AND DISCHARGE of Bridge River 30 miles from mouth, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 1-1 | 790 | 2-75 | 2,400 | 4-75 | 5,100 |
| 2 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 1-1 | 790 | 3-35 | 3,100 | 5-75 | 6,800 |
| 3 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 1-15 | 820 | 3-95 | 3,900 | 6-75 | 8,700 |
| 4 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 1-15 | 830 | 3-7 | 3,600 | 7-00 | 9,300 |
| 5 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 1-25 | 900 | 3-55 | 3,400 | 6-0 | 7,300 |
| 6 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 1-55 | 1,150 | 3-4 | 3,200 | 5-35 | 6,100 |
| 7 | 1-15 | 820 | 0-8 | 580 | 0-8 | 580 | 1-75 | 1,340 | 3-4 | 3,200 | 5-15 | 5,800 |
| 8 | 1-2 | 860 | 0-8 | 580 | 0-8 | 580 | 1-85 | 1,420 | 3-4 | 3,200 | 5-0 | 5,500 |
| 9 | 1-2 | 860 | 0-8 | 580 | 0-8 | 580 | 1-90 | 1,470 | 3-45 | 3,200 | 4-8 | 5,200 |
| 10 | 1-2 | 860 | 0-8 | 580 | 0-8 | 580 | 2-1 | 1,670 | 3-8 | 3,700 | 5-05 | 5,600 |
| 11 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 2-15 | 1,720 | 4-35 | 4,500 | 5-55 | 6,400 |
| 12 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 2-20 | 1,770 | 4-95 | 5,400 | 6-1 | 7,500 |
| 13 | 1-1 | 790 | 0-8 | 580 | 0-8 | 580 | 2-25 | 1,820 | 5-35 | 6,100 | 6-95 | 9,200 |
| 14 | 0-9 | 650 | 0-8 | 580 | 0-85 | 610 | 2-3 | 1,870 | 5-9 | 7,100 | 7-55 | 10,500 |
| 15 | 0-8 | 580 | 0-8 | 580 | 1-1 | 790 | 2-35 | 1,930 | 6-5 | 8,200 | 8-5 | 12,700 |
| 16 | 0-8 | 580 | 0-8 | 580 | 1-1 | 790 | 2-4 | 1,980 | 6-4 | 8,000 | 9-15 | 14,400 |
| 17 | 0-8 | 580 | 0-8 | 580 | 1-1 | 790 | 2-3 | 1,870 | 5-8 | 6,900 | 9-65 | 15,800 |
| 18 | 0-8 | 580 | 0-8 | 580 | 1-15 | 830 | 2-2 | 1,770 | 5-5 | 6,400 | 9-7 | 18,800 |
| 19 | 0-8 | 580 | 0-8 | 580 | 1-3 | 940 | 2-4 | 1,980 | 5-35 | 6,100 | 9-2 | 14,500 |
| 20 | 0-8 | 580 | 0-8 | 580 | 1-45 | 1,060 | 2-55 | 2,140 | 5-3 | 6,000 | 8-3 | 12,300 |
| 21 | 0-8 | 580 | 0-8 | 580 | 1-5 | 1,110 | 2-45 | 2,040 | 5-55 | 6,400 | 7-35 | 10,000 |
| 22 | 0-8 | 580 | 0-8 | 580 | 1-5 | 1,110 | 2-3 | 1,870 | 6-1 | 7,500 | 6-4 | 8,000 |
| 23 | 0-8 | 580 | 0-8 | 580 | 1-5 | 1,110 | 2-35 | 1,920 | 6-7 | 8,600 | 5-8 | 6,900 |
| 24 | 0-75 | 550 | 0-8 | 580 | 1-35 | 980 | 2-3 | 1,870 | 7-3 | 9,900 | 5-7 | 6,700 |
| 25 | 0-7 | 520 | 0-8 | 580 | 1-35 | 980 | 2-25 | 1,820 | 7-15 | 9,600 | 6-05 | 7,400 |
| 26 | 0-7 | 520 | 0-8 | 580 | 1-2 | 860 | 2-2 | 1,770 | 6-35 | 7,900 | 6-65 | 8,500 |
| 27 | 0-7 | 520 | 0-8 | 580 | 1-2 | 860 | 2-2 | 1,770 | 5-45 | 6,300 | 7-1 | 9,500 |
| 28 | 0-7 | 520 | 0-8 | 580 | 1-2 | 860 | 2-2 | 1,770 | 4-7 | 5,000 | 7-2 | 9,700 |
| 29 | 0-7 | 520 | | | 1-2 | 860 | 2-2 | 1,770 | 4-1 | 4,100 | 7-45 | 10,300 |
| 30 | 0-8 | 580 | | | 1-2 | 860 | 2-35 | 1,920 | 4-1 | 4,100 | 7-7 | 10,800 |
| 31 | 0-8 | 580 | | | 1-15 | 820 | | | 4-2 | 4,300 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Bridge River 30 miles from mouth,
for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|--------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Dis-charge | Gauge Height | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 8.4 | 12,500 | 5.8 | 6,900 | 5.0 | 5,500 | 3.35 | 3,100 | 3.75 | 3,650 | 2.0 | 1,570 |
| 2 | 8.95 | 13,300 | 6.6 | 8,400 | 5.0 | 5,500 | 2.95 | 2,600 | 3.5 | 3,300 | 2.0 | 1,570 |
| 3 | 9.35 | 14,900 | 6.75 | 8,700 | 5.1 | 5,700 | 2.65 | 2,300 | 3.25 | 2,970 | 2.0 | 1,570 |
| 4 | 9.7 | 18,800 | 6.8 | 8,800 | 4.45 | 4,600 | 2.50 | 2,100 | 2.0 | 1,570 | 1.9 | 1,470 |
| 5 | 9.6 | 15,600 | 6.85 | 8,900 | 4.6 | 4,900 | 2.4 | 2,000 | 2.0 | 1,570 | 1.75 | 1,340 |
| 6 | 9.35 | 14,900 | 6.9 | 9,000 | 4.6 | 4,900 | 2.4 | 2,000 | 2.75 | 2,370 | 1.7 | 1,290 |
| 7 | 8.7 | 13,200 | 6.95 | 9,200 | 4.75 | 5,100 | 2.4 | 2,000 | 2.7 | 2,310 | 1.6 | 1,200 |
| 8 | 8.5 | 12,700 | 6.25 | 7,700 | 4.8 | 5,200 | 2.45 | 2,000 | 2.7 | 2,310 | 1.6 | 1,200 |
| 9 | 8.25 | 12,100 | 5.5 | 6,400 | 4.4 | 4,600 | 2.55 | 2,100 | 2.8 | 2,430 | 1.45 | 1,060 |
| 10 | 8.55 | 12,900 | 5.35 | 6,100 | 4.0 | 4,000 | 2.75 | 2,400 | 2.75 | 2,370 | 1.35 | 980 |
| 11 | 9.0 | 14,000 | 5.8 | 6,900 | 3.65 | 3,500 | 2.7 | 2,300 | 2.65 | 2,260 | 0.7 | 520 |
| 12 | 9.35 | 14,900 | 6.35 | 7,900 | 3.85 | 3,800 | 2.55 | 2,100 | 2.45 | 2,030 | 1.0 | 720 |
| 13 | 9.35 | 14,900 | 6.2 | 7,600 | 3.2 | 2,900 | 2.8 | 2,400 | 2.4 | 1,980 | 1.2 | 860 |
| 14 | 9.25 | 14,600 | 6.65 | 8,500 | 3.15 | 2,800 | 6.6 | 8,400 | 2.15 | 1,720 | 1.5 | 1,110 |
| 15 | 9.20 | 14,500 | 6.9 | 9,000 | 3.1 | 2,800 | 7.8 | 11,100 | 2.0 | 1,570 | 1.6 | 1,200 |
| 16 | 9.0 | 14,000 | 6.75 | 8,700 | 3.1 | 2,800 | 7.02 | 9,300 | 2.0 | 1,570 | 1.65 | 1,250 |
| 17 | 8.65 | 13,100 | 6.55 | 8,300 | 2.75 | 2,400 | 6.95 | 9,200 | 2.0 | 1,570 | 1.65 | 1,250 |
| 18 | 8.75 | 13,300 | 6.15 | 7,500 | 2.6 | 2,200 | 6.25 | 7,700 | 2.0 | 1,570 | 1.95 | 1,520 |
| 19 | 8.95 | 13,900 | 6.3 | 7,800 | 2.7 | 2,300 | 5.0 | 5,500 | 2.1 | 1,670 | 2.35 | 1,930 |
| 20 | 9.3 | 14,800 | 6.5 | 8,800 | 2.85 | 2,500 | 4.3 | 4,400 | 2.25 | 1,820 | 3.0 | 2,670 |
| 21 | 8.85 | 13,600 | 6.65 | 8,500 | 2.7 | 2,300 | 3.8 | 3,700 | 2.15 | 1,720 | 3.25 | 2,970 |
| 22 | 7.4 | 10,100 | 6.55 | 8,300 | 2.5 | 2,100 | 3.45 | 3,200 | 2.1 | 1,670 | 3.2 | 2,910 |
| 23 | 6.95 | 9,200 | 6.15 | 7,500 | 2.6 | 2,200 | 3.25 | 3,000 | 2.1 | 1,670 | 3.2 | 2,910 |
| 24 | 7.0 | 9,300 | 5.85 | 6,800 | 2.75 | 2,400 | 3.05 | 2,700 | 2.0 | 1,570 | 3.0 | 2,670 |
| 25 | 7.0 | 9,300 | 5.8 | 6,900 | 2.9 | 2,500 | 3.0 | 2,700 | 2.2 | 1,770 | 3.0 | 2,670 |
| 26 | 6.95 | 9,200 | 5.85 | 6,800 | 3.35 | 3,100 | 2.9 | 2,500 | 2.6 | 2,200 | 3.0 | 2,670 |
| 27 | 6.75 | 8,700 | 6.0 | 7,300 | 3.55 | 3,400 | 2.9 | 2,500 | 2.45 | 2,040 | 3.0 | 2,670 |
| 28 | 5.8 | 6,800 | 6.15 | 7,500 | 3.4 | 3,200 | 2.9 | 2,500 | 2.3 | 1,870 | 3.0 | 2,670 |
| 29 | 5.55 | 6,400 | 6.0 | 7,300 | 3.2 | 2,900 | 2.9 | 2,500 | 2.05 | 1,620 | 2.8 | 2,430 |
| 30 | 5.55 | 6,400 | 5.65 | 6,600 | 3.6 | 3,400 | 3.2 | 2,900 | 2.0 | 1,570 | 2.8 | 2,430 |
| 31 | 5.7 | 6,700 | 5.2 | 5,800 | | | 4.26 | 4,400 | | | 2.15 | 1,720 |

CAYUSE CREEK (1048).

Location.—At the Pacific Great Eastern Railway trestle, 2 miles from the mouth and $2\frac{1}{2}$ miles from Lillooet.

Records Available.—Daily discharges from April 8, 1914, to December 31, 1914.

Drainage Area.—Three hundred and fifty square miles (measured from the provincial map of 1912, scale 12 miles to 1 inch.)

Gauge.—Vertical staff on pile in the trestle; referenced to three benchmarks. Daily readings.

Channel.—Wide and of moderate depth, strewn with boulders and coarse gravel. The current is very swift, especially at the higher stages. The metering section is a good one.

Discharge Measurements.—Four discharge measurements in 1914 define the rating curve very well, except for extremely high and low stages of the water.

Winter Flow.—Open water conditions all winter.

Accuracy.—Daily gauge readings combined with a well-defined rating curve should insure a reasonable degree of accuracy except possibly at extremely high stages.

CAYUSE CREEK (1048).

Cayuse creek rises in Duffy lake and discharges into the Fraser river, 1 mile below Lillooet, at an elevation of about 740 feet. The drainage area is about 350 square miles.

The climate in the Cayuse creek watershed is much similar to that in the Lillooet district. The summers are quite hot, and the winters rather severe. At the mouth the mean annual precipitation is probably about 15 inches, and this may increase to 30 inches or more at the higher altitudes near the headwaters.

The discharge figures indicate that there is a considerable quantity of water flowing in Cayuse creek. This water could be made use of for irrigation or for water-power.

A very small fraction of the water is being used at present for irrigation purposes on a few ranches near the mouth. The water could be used very extensively on the Fraser River benches across from Lillooet. The water could be carried, in a flume, from the stream to a point on the Fraser river about 1 mile above Lillooet and taken across the river at this point. This would be a large undertaking, but would reclaim a large tract of first-class fruit-growing land.

The stream falls very rapidly and there is a large fall about 3 miles from the mouth. Water-power could be developed by running a pipe from the head of the falls to the flats below; or the water could be carried around the hill in a flume to a point above Seton lake, and the power-house located beside the lake. The second plan would give a little less head than the first. At present there is little or no market for power in the vicinity.

The main line of the Pacific Great Eastern railway crosses the stream about 2 miles from its mouth and follows it to the Fraser river.

DISCHARGE MEASUREMENTS of Cayuse Creek above Seton Creek, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| April 8..... | H. J. E. Keys..... | 1,046 | 67 | 171 | 2-29 | 0-70 | 392 ¹ |
| June 13..... | Keys & Hughes..... | 1,046 | 80 | 326 | 6-53 | 2-30 | 2,131 |
| " 19..... | H. C. Hughes..... | 1,046 | 90 | 410 | 8-30 | 2-70 | 3,410 |
| Aug. 1..... | "..... | 1,046 | 73 | 275 | 3-49 | 1-60 | 957 |
| Sept. 17..... | "..... | 1,046 | 70 | 213 | 1-93 | 0-79 | 412 |

¹Station established.

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MONTHLY DISCHARGE of Cayuse Creek above Seton Creek, for 1914.

(Drainage area, 350 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| May..... | 3,400 | 480 | 1,616 | 4.6 | 5.3 | 99,300 | B |
| June..... | 6,550 | 1,350 | 2,833 | 8.1 | 9.0 | 168,600 | B |
| July..... | 6,000 | 850 | 2,915 | 8.3 | 9.6 | 179,000 | B |
| August..... | 1,050 | 640 | 818 | 2.3 | 2.7 | 50,300 | B |
| September..... | 780 | 420 | 548 | 1.6 | 1.8 | 32,600 | B |
| October..... | 1,000 | 470 | 603 | 1.7 | 2.0 | 37,100 | B |
| November..... | 630 | 380 | 475 | 1.4 | 1.5 | 28,300 | B |
| December..... | 420 | 240 | 298 | 0.8 | 0.9 | 18,300 | B |

DAILY GAUGE HEIGHT AND DISCHARGE of Cayuse Creek above Seton Creek, for 1914.

| DAY. | April. | | May. | | June. | | July. | | August. | | September. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 0.9 | 480 | 2.3 | 2,150 | 2.9 | 4,150 | 1.5 | 850 | 1.2 | 640 |
| 2..... | | | 1.2 | 630 | 2.3 | 2,150 | 3.1 | 4,850 | 1.5 | 850 | 1.15 | 600 |
| 3..... | | | 1.4 | 780 | 2.4 | 2,400 | 3.2 | 5,250 | 1.6 | 950 | 1.1 | 580 |
| 4..... | | | 1.5 | 850 | 2.5 | 2,700 | 3.4 | 6,000 | 1.7 | 1,050 | 1.1 | 580 |
| 5..... | | | 1.4 | 780 | 2.4 | 2,400 | 3.3 | 5,600 | 1.7 | 1,050 | 1.1 | 530 |
| 6..... | | | 1.3 | 700 | 2.3 | 2,150 | 3.1 | 4,850 | 1.7 | 1,050 | 0.9 | 470 |
| 7..... | | | 1.3 | 700 | 2.2 | 1,900 | 2.8 | 3,750 | 1.7 | 1,050 | 0.9 | 470 |
| 8..... | | | 1.3 | 700 | 2.0 | 1,500 | 2.6 | 3,050 | 1.6 | 950 | 0.9 | 470 |
| 9..... | | | 1.3 | 700 | 1.9 | 1,350 | 2.7 | 3,400 | 1.4 | 780 | 0.95 | 500 |
| 10..... | | | 1.5 | 850 | 1.9 | 1,350 | 2.8 | 3,750 | 1.5 | 850 | 1.0 | 530 |
| 11..... | | | 1.6 | 950 | 2.0 | 1,500 | 2.9 | 4,150 | 1.5 | 850 | 1.0 | 530 |
| 12..... | | | 1.75 | 1,100 | 2.1 | 1,700 | 2.8 | 3,750 | 1.5 | 850 | 0.9 | 470 |
| 13..... | | | 2.0 | 1,500 | 2.3 | 2,150 | 2.8 | 3,750 | 1.6 | 950 | 0.9 | 470 |
| 14..... | | | 2.3 | 2,150 | 2.9 | 4,150 | 2.7 | 3,400 | 1.6 | 950 | 0.85 | 450 |
| 15..... | | | 2.5 | 2,700 | 3.15 | 5,050 | 2.6 | 3,050 | 1.5 | 850 | 0.85 | 450 |
| 16..... | | | 2.3 | 2,150 | 3.45 | 6,180 | 2.5 | 2,700 | 1.5 | 850 | 0.8 | 420 |
| 17..... | 0.85 | 450 | 2.1 | 1,700 | 3.55 | 6,550 | 2.4 | 2,400 | 1.45 | 800 | 0.8 | 420 |
| 18..... | 0.85 | 450 | 2.2 | 1,900 | 3.40 | 5,980 | 2.5 | 2,700 | 1.4 | 780 | 1.0 | 530 |
| 19..... | 0.8 | 420 | 2.1 | 1,700 | 3.15 | 5,050 | 2.6 | 3,050 | 1.4 | 780 | 1.1 | 580 |
| 20..... | 0.8 | 420 | 2.2 | 1,900 | 2.85 | 3,950 | 2.4 | 2,400 | 1.4 | 780 | 1.1 | 580 |
| 21..... | 0.8 | 420 | 2.2 | 1,900 | 2.5 | 2,700 | 2.1 | 1,700 | 1.4 | 780 | 1.15 | 600 |
| 22..... | 0.75 | 400 | 2.3 | 2,150 | 2.2 | 1,900 | 2.1 | 1,700 | 1.4 | 780 | 1.0 | 530 |
| 23..... | 0.75 | 400 | 2.4 | 2,400 | 2.0 | 1,500 | 2.0 | 1,500 | 1.3 | 700 | 1.0 | 530 |
| 24..... | 0.75 | 400 | 2.7 | 3,400 | 1.9 | 1,350 | 2.0 | 1,500 | 1.3 | 700 | 1.1 | 580 |
| 25..... | 0.75 | 400 | 2.5 | 2,700 | 2.1 | 1,700 | 2.0 | 1,500 | 1.3 | 700 | 1.2 | 640 |
| 26..... | 0.75 | 400 | 2.4 | 2,400 | 2.2 | 1,900 | 1.9 | 1,350 | 1.2 | 640 | 1.2 | 640 |
| 27..... | 0.75 | 400 | 2.3 | 2,150 | 2.3 | 2,150 | 1.8 | 1,200 | 1.2 | 640 | 1.2 | 640 |
| 28..... | 0.7 | 390 | 2.3 | 2,150 | 2.5 | 2,700 | 1.8 | 1,200 | 1.2 | 640 | 1.1 | 580 |
| 29..... | 0.65 | 370 | 2.2 | 1,900 | 2.0 | 1,500 | 1.7 | 1,050 | 1.2 | 640 | 1.2 | 640 |
| 30..... | 0.9 | 480 | 2.2 | 1,900 | 2.8 | 3,750 | 1.5 | 850 | 1.25 | 660 | 1.4 | 780 |
| 31..... | | | 2.3 | 2,150 | | | 1.5 | 850 | 1.2 | 640 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Cayuse Creek above Seton Creek,
for 1914—*Con.*

| DAY. | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-2 | 640 | 1-2 | 630 | 0-8 | 420 |
| 2 | 1-2 | 640 | 1-2 | 630 | 0-7 | 380 |
| 3 | 1-15 | 600 | 1-2 | 630 | 0-7 | 380 |
| 4 | 1-1 | 570 | 1-2 | 630 | 0-7 | 380 |
| 5 | 1-0 | 580 | 1-1 | 570 | 0-7 | 380 |
| 6 | 1-0 | 535 | 1-0 | 530 | 0-7 | 380 |
| 7 | 1-0 | 530 | 1-0 | 530 | 0-6 | 350 |
| 8 | 0-95 | 500 | 1-0 | 530 | 0-6 | 350 |
| 9 | 0-9 | 480 | 1-0 | 530 | 0-6 | 350 |
| 10 | 0-9 | 480 | 1-0 | 530 | 0-6 | 350 |
| 11 | 0-9 | 480 | 1-0 | 530 | 0-5 | 320 |
| 12 | 0-9 | 480 | 1-0 | 530 | 0-4 | 290 |
| 13 | 0-95 | 500 | 0-9 | 480 | 0-3 | 260 |
| 14 | 1-0 | 530 | 0-7 | 380 | 0-2 | 240 |
| 15 | 1-1 | 570 | 0-7 | 380 | 0-2 | 240 |
| 16 | 1-3 | 700 | 0-7 | 380 | 0-3 | 260 |
| 17 | 1-65 | 1,000 | 0-7 | 380 | 0-3 | 260 |
| 18 | 1-6 | 950 | 0-7 | 380 | 0-2 | 240 |
| 19 | 1-5 | 850 | 0-7 | 380 | 0-2 | 240 |
| 20 | 1-4 | 780 | 0-7 | 380 | 0-3 | 260 |
| 21 | 1-3 | 700 | 0-7 | 380 | 0-4 | 290 |
| 22 | 1-2 | 640 | 0-7 | 380 | 0-4 | 290 |
| 23 | 1-2 | 640 | 0-7 | 380 | 0-4 | 290 |
| 24 | 1-0 | 530 | 0-7 | 380 | 0-4 | 290 |
| 25 | 1-0 | 530 | 0-7 | 380 | 0-3 | 260 |
| 26 | 1-0 | 530 | 0-9 | 480 | 0-3 | 260 |
| 27 | 1-0 | 530 | 0-9 | 480 | 0-3 | 260 |
| 28 | 1-0 | 530 | 0-9 | 480 | 0-3 | 260 |
| 29 | 0-9 | 470 | 0-9 | 480 | 0-2 | 240 |
| 30 | 1-2 | 650 | 0-9 | 480 | 0-2 | 240 |
| 31 | 1-2 | 650 | | | 0-2 | 240 |

CHEKAMUS RIVER (1034).

Location.—Highway bridge about 1 mile from the mouth and 10 miles from Squamish.

Records Available.—Daily discharges from March 11 to December 31, 1914.

Drainage Area.—Measured from Provincial map dated 1912 (scale 17.75 miles to 1 inch). Area above measuring section is 250 square miles.

Gauge.—Chain gauge from highway bridge. Referenced to three benchmarks. Readings daily.

Channel.—Wide and shallow. The bed is rough and strewn with boulders.

Discharge Measurements.—Seven discharge measurements were taken during 1914 and the winter of 1915.

Winter Flow.—Open water conditions.

Accuracy.—B. and C.

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DISCHARGE MEASUREMENTS of Cheakamus River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 21..... | Keys and Hughes..... | 1046 | 140 | 555 | 7.87 | 4.30 | 4,370 |
| June 23..... | C. G. Cline..... | 1933 | 140 | 490 | 5.80 | 3.60 | 2,840 |
| Sept. 2..... | H. C. Hughes..... | 1152 | 140 | 383 | 5.38 | 3.28 | 2,060 |
| Oct. 8..... | "..... | 1933 | 140 | 300 | 4.67 | 2.55 | 1,400 |
| Nov. 24..... | Dobbie and Hughes..... | 1056 | 140 | 473 | 2.96 | 3.75 | 2,410 |

* Channel may have changed during freshet in October.

MONTHLY DISCHARGE of Cheakamus River at one mile from mouth, for 1914.

(Drainage area, 250 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| April..... | 5,550 | 1,150 | 2,618 | 10.4 | 11.6 | 156,000 | B |
| May..... | 6,750 | 2,450 | 4,250 | 17.0 | 19.6 | 261,000 | B |
| June..... | 8,120 | 2,080 | 4,333 | 17.3 | 19.3 | 258,000 | C |
| July..... | 8,250 | 2,450 | 5,020 | 20.1 | 23.2 | 309,000 | C |
| August..... | 4,600 | 2,300 | 3,200 | 12.8 | 14.8 | 197,000 | B |
| September..... | 6,170 | 1,190 | 2,011 | 8.0 | 9.0 | 120,000 | B |
| October..... | 14,500 | 1,070 | 4,080 | 16.3 | 18.8 | 251,000 | C |
| November..... | 8,620 | 950 | 3,338 | 13.3 | 14.8 | 198,000 | B |
| December..... | 1,770 | 550 | 790 | 3.2 | 3.6 | 48,600 | C |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Cheakamus River at one mile from mouth, for 1914.

| DAY. | March. | | April. | | May. | | June. | | July. | | August. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 2-8 | 1,770 | 3-4 | 2,600 | 4-55 | 4,960 | 5-2 | 6,500 | 3-3 | 2,450 |
| 2 | | | 2-6 | 1,530 | 4-0 | 3,750 | 4-55 | 4,960 | 5-4 | 7,000 | 3-4 | 2,600 |
| 3 | | | 2-4 | 1,330 | 4-3 | 4,400 | 4-35 | 4,520 | 5-7 | 7,750 | 3-9 | 3,550 |
| 4 | | | 2-2 | 1,150 | 3-8 | 3,350 | 3-95 | 3,650 | 5-9 | 8,250 | 3-9 | 3,550 |
| 5 | | | 4-4 | 4,600 | 3-8 | 3,350 | 3-55 | 2,880 | 5-4 | 7,000 | 3-7 | 3,150 |
| 6 | | | 3-8 | 3,350 | 3-6 | 2,950 | 3-45 | 2,690 | 5-4 | 7,000 | 3-7 | 3,150 |
| 7 | | | 3-1 | 2,150 | 3-5 | 2,800 | 3-45 | 2,690 | 4-9 | 5,800 | 3-9 | 3,550 |
| 8 | | | 3-1 | 2,150 | 3-5 | 2,800 | 3-05 | 2,080 | 4-9 | 5,800 | 3-9 | 3,550 |
| 9 | | | 3-1 | 2,150 | 3-6 | 2,950 | 3-05 | 2,080 | 4-5 | 4,850 | 3-9 | 3,550 |
| 10 | | | 3-1 | 2,150 | 4-0 | 3,750 | 3-05 | 2,080 | 4-9 | 5,800 | 3-9 | 3,550 |
| 11 | 1-7 | 800 | 3-1 | 2,150 | 4-0 | 3,750 | 3-25 | 2,370 | 4-9 | 5,800 | 3-8 | 3,550 |
| 12 | 1-7 | 800 | 3-0 | 2,020 | 4-4 | 4,600 | 3-75 | 3,250 | 4-9 | 5,800 | 4-2 | 4,150 |
| 13 | 2-5 | 1,430 | 3-2 | 2,300 | 4-7 | 5,300 | 4-35 | 4,520 | 4-9 | 5,800 | 4-4 | 4,600 |
| 14 | 4-2 | 4,150 | 4-8 | 5,550 | 4-9 | 5,800 | 4-75 | 5,420 | 4-9 | 5,800 | 4-4 | 4,600 |
| 15 | 3-0 | 2,020 | 4-8 | 5,550 | 5-3 | 6,750 | 5-05 | 6,170 | 4-4 | 4,600 | 4-4 | 4,600 |
| 16 | 3-5 | 2,800 | 4-0 | 3,750 | 5-3 | 6,750 | 5-25 | 6,630 | 4-4 | 4,600 | 3-9 | 3,550 |
| 17 | 2-7 | 1,650 | 3-7 | 3,150 | 4-4 | 4,600 | 5-85 | 8,120 | 4-9 | 5,800 | 3-9 | 3,550 |
| 18 | 2-8 | 1,770 | 3-0 | 2,020 | 4-4 | 4,600 | 4-95 | 5,920 | 4-8 | 5,550 | 3-7 | 3,150 |
| 19 | 3-0 | 2,020 | 6-0 | 8,520 | 4-4 | 4,600 | 4-95 | 5,920 | 4-8 | 5,550 | 3-7 | 3,150 |
| 20 | 3-0 | 2,020 | 4-0 | 3,750 | 4-4 | 4,600 | 4-55 | 4,960 | 4-3 | 4,400 | 3-5 | 2,800 |
| 21 | 3-0 | 2,020 | 3-6 | 2,950 | 4-6 | 5,100 | 4-25 | 4,260 | 4-1 | 3,950 | 3-5 | 2,800 |
| 22 | 3-0 | 2,020 | 3-0 | 2,020 | 4-8 | 5,550 | 3-55 | 2,880 | 3-9 | 3,550 | 3-4 | 2,600 |
| 23 | 3-0 | 2,020 | 2-9 | 1,890 | 5-1 | 6,250 | 3-55 | 2,880 | 3-9 | 3,550 | 3-4 | 2,600 |
| 24 | 2-7 | 1,650 | 2-5 | 1,430 | 5-0 | 6,050 | 3-65 | 5,220 | 3-9 | 3,550 | 3-4 | 2,600 |
| 25 | 2-5 | 1,430 | 2-4 | 1,330 | 4-6 | 5,100 | 4-25 | 4,260 | 3-9 | 3,550 | 3-5 | 2,800 |
| 26 | 2-4 | 1,330 | 2-3 | 1,230 | 4-2 | 4,150 | 3-95 | 3,650 | 4-2 | 4,150 | 3-5 | 2,800 |
| 27 | 2-3 | 1,230 | 2-4 | 1,330 | 4-0 | 3,750 | 4-45 | 4,720 | 3-9 | 3,550 | 3-5 | 2,800 |
| 28 | 2-0 | 990 | 2-5 | 1,430 | 3-8 | 3,350 | 4-75 | 5,430 | 3-6 | 2,950 | 3-4 | 2,600 |
| 29 | 2-2 | 1,150 | 2-6 | 1,530 | 3-6 | 2,950 | 4-75 | 5,420 | 3-4 | 2,600 | 3-3 | 2,450 |
| 30 | 2-2 | 1,150 | 3-2 | 2,300 | 3-3 | 2,450 | 4-75 | 5,420 | 3-3 | 2,450 | 3-3 | 2,450 |
| 31 | 2-0 | 990 | | | 3-6 | 2,950 | | | 3-3 | 2,450 | 3-2 | 2,300 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Cheakamus River at one mile from mouth, for 1914—*Con.*

| DAY. | September. | | October. | | November. | | December. | |
|---------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|
| | Gauge Height | Discharge. | Gauge Height | Discharge. | Gauge Height | Discharge. | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3-05 | 2,080 | 3-3 | 2,450 | 5-75 | 7,880 | 2-8 | 1,770 |
| 2..... | 3-05 | 2,080 | 3-3 | 2,450 | 6-05 | 8,620 | 2-6 | 1,530 |
| 3..... | 3-05 | 2,080 | 2-5 | 1,430 | 5-35 | 6,880 | 2-5 | 1,450 |
| 4..... | 3-05 | 2,080 | 2-4 | 1,330 | 5-55 | 7,380 | 2-4 | 1,330 |
| 5..... | 2-95 | 1,950 | 2-1 | 1,070 | 4-05 | 3,050 | 2-2 | 1,150 |
| 6..... | 2-65 | 1,590 | 2-1 | 1,070 | 4-05 | 3,850 | 2-1 | 1,070 |
| 7..... | 2-65 | 1,590 | 2-1 | 1-070 | 4-25 | 4,260 | 1-9 | 920 |
| 8..... | 2-75 | 1,720 | 2-1 | 1,070 | 4-55 | 4,960 | 1-8 | 860 |
| 9..... | 2-65 | 1,590 | 2-2 | 1,150 | 4-35 | 4,520 | 1-8 | 860 |
| 10..... | 2-55 | 1,480 | 2-4 | 1,330 | 4-15 | 4,060 | 1-7 | 800 |
| 11..... | 2-55 | 1,480 | 2-2 | 1,150 | 3-95 | 3,650 | 1-6 | 750 |
| 12..... | 2-55 | 1,480 | 2-3 | 1,230 | 3-35 | 2,530 | 1-5 | 700 |
| 13..... | 2-25 | 1,190 | 8-4 | 14,550 | 3-05 | 2,080 | 1-5 | 700 |
| 14..... | 2-35 | 1,280 | 6-9 | 10,750 | 2-75 | 1,720 | 1-4 | 650 |
| 15..... | 2-35 | 1,280 | 4-7 | 5,300 | 2-55 | 1,480 | 1-4 | 650 |
| 16..... | 2-25 | 1,190 | 7-2 | 11,500 | 2-45 | 1,380 | 1-3 | 600 |
| 17..... | 2-25 | 1,190 | 8-4 | 14,550 | 2-25 | 1,190 | 1-3 | 600 |
| 18..... | 5-05 | 6,170 | 6-4 | 9,500 | 2-15 | 1,110 | 1-3 | 600 |
| 19..... | 4-05 | 3,850 | 6-4 | 9,500 | 2-35 | 1,280 | 1-3 | 600 |
| 20..... | 3-55 | 2,890 | 4-9 | 5,800 | 2-15 | 1,110 | 1-3 | 600 |
| 21..... | 3-35 | 2,530 | 4-2 | 4,150 | 1-95 | 950 | 1-3 | 600 |
| 22..... | 3-25 | 2,380 | 3-8 | 3,350 | 2-35 | 1,280 | 1-3 | 600 |
| 23..... | 2-85 | 1,830 | 3-3 | 2,450 | 3-35 | 2,530 | 1-3 | 600 |
| 24..... | 2-65 | 1,590 | 3-0 | 2,020 | 3-45 | 2,680 | 1-3 | 600 |
| 25..... | 2-45 | 1,380 | 3-0 | 2,020 | 4-05 | 3,850 | 1-3 | 600 |
| 26..... | 2-25 | 1,190 | 2-9 | 1,890 | 3-75 | 3,250 | 1-3 | 600 |
| 27..... | 2-45 | 1,380 | 2-8 | 1,770 | 3-75 | 3,250 | 1-2 | 550 |
| 28..... | 3-65 | 3,050 | 2-6 | 1,530 | 3-95 | 3,650 | 1-2 | 550 |
| 29..... | 3-25 | 2,380 | 2-6 | 1,530 | 3-45 | 2,680 | 1-2 | 550 |
| 30..... | 3-25 | 2,380 | 3-8 | 3,350 | 3-15 | 2,220 | 1-2 | 550 |
| 31..... | | | 4-4 | 4,600 | | | 1-2 | 550 |

FOUNTAIN CREEK (1047).

Location.—About 100 yards above irrigation ditches, $1\frac{1}{2}$ miles from the mouth, and 10 miles from Lillooet.

Records Available.—Daily discharges from June 11, 1914, to October 10, 1914, (irrigation season).

Drainage Area.—Twenty square miles (measured from the provincial map of 1913, scale 12 miles to 1 inch).

Gauge.—Vertical staff nailed to tree about 100 yards above ditches. Referred to three bench-marks. Readings daily.

Channel.—Wide and shallow, gravel bottom. The current is fairly fast. The metering section is a good one.

Discharge Measurements.—Two discharge measurements in 1914 define the rating curve fairly well for the variations during the irrigation season.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—D.

FOUNTAIN CREEK (1047).

Fountain creek has its source in Fountain lake, and discharges into the Fraser river, about 9 miles above Lillooet, at an elevation of some 760 feet. The drainage area is about 20 square miles.

The climate in the Fountain Creek valley is much similar to that of the Lillooet district generally. The summers are hot and the winters rather severe. The mean annual precipitation in the watershed is about 10 inches.

The valley of Fountain creek and the adjacent benches on the Fraser river are well adapted to cultivation, when irrigated, and the water from the creek is used for this purpose. Some attempt has been made to regulate the normal flow to give sufficient water in the low-water season. A small timber dam was installed at the outlet of the lake. In this way the spring and early summer freshets are stored to be used in the late summer when the normal flow is very small. The dam has a sluice-gate in it, and when it is opened the water flows down the natural channel of the stream to the irrigation ditches. This storage scheme could be enlarged upon to a considerable extent.

There is a large ranch at the mouth of the creek called Fountain ranch. It is a splendid place, and a good example of the agricultural possibilities of the surrounding valley.

There is some good timber in the upper part of the valley. A small saw-mill has been built on the lake.

The gauging station was established on June 11, 1914. The regulated flow of the stream is at it. Several water leases have been applied for to divert water from the stream above the gauge. These diversions, will in all probability, be made next spring, so the gauging station may have to be changed.

DISCHARGE MEASUREMENTS of Fountain Creek above intake on irrigation ditch, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------------------|--------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| June 11 ¹ | Keys & Hughes..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Aug. 2..... | H. C. Hughes..... | 1046 | 10 | 5-35 | 2-57 | 1-00 | 14-0 |
| Sept. 20..... | "..... | 1046 | 10 | 3-50 | 1-99 | 0-87 | 6-96 |

¹Station established.

MONTHLY DISCHARGE of Fountain Creek above irrigation ditches, for 1914.

(Drainage area, 20 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| July..... | 20 | 4 | 16-6 | 0-8 | 0-9 | 1,020 |
| August..... | 20 | 4 | 10-5 | 0-5 | 0-6 | 650 |
| September..... | 8 | 1 | 6-0 | 0-3 | 0-3 | 360 |

Accuracy " D."

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DAILY GAUGE HEIGHT AND DISCHARGE of Fountain Creek above irrigation ditches, for 1914.

| DAY. | June. | | July. | | August. | | September. | | October. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 1-1 | 20 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 |
| 2..... | | | 1-1 | 20 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 |
| 3..... | | | 1-1 | 20 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 |
| 4..... | | | 1-0 | 14 | 1-1 | 20 | 0-8 | 4 | 0-9 | 8 |
| 5..... | | | 1-1 | 20 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 |
| 6..... | | | 1-1 | 20 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 |
| 7..... | | | 1-1 | 20 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 |
| 8..... | | | 1-1 | 20 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 |
| 9..... | | | 1-1 | 20 | 0-8 | 4 | 0-8 | 4 | 0-9 | 8 |
| 10..... | | | 1-1 | 20 | 1-1 | 20 | 0-7 | 1 | 0-9 | 8 |
| 11..... | | | 1-1 | 20 | 1-0 | 14 | 0-7 | 1 | | |
| 12..... | 1-3 | 32 | 1-0 | 14 | 1-0 | 14 | 0-7 | 1 | | |
| 13..... | 1-3 | 32 | 1-0 | 14 | 1-0 | 14 | 0-8 | 4 | | |
| 14..... | 1-4 | 39 | 1-0 | 14 | 0-9 | 8 | 0-9 | 8 | | |
| 15..... | 1-3 | 32 | 1-0 | 14 | 0-9 | 8 | 0-9 | 8 | | |
| 16..... | 1-2 | 26 | 1-0 | 14 | 0-9 | 8 | 0-9 | 8 | | |
| 17..... | 1-3 | 32 | 0-9 | 8 | 0-9 | 8 | 0-9 | 8 | | |
| 18..... | 1-3 | 32 | 1-2 | 26 | 1-0 | 14 | 0-9 | 8 | | |
| 19..... | 1-1 | 20 | 1-0 | 14 | 1-0 | 14 | 0-9 | 8 | | |
| 20..... | 1-1 | 20 | 1-0 | 14 | 1-0 | 14 | 0-9 | 8 | | |
| 21..... | 1-1 | 20 | 1-0 | 14 | 0-9 | 8 | 0-9 | 8 | | |
| 22..... | 1-1 | 20 | 1-0 | 14 | 0-9 | 8 | 0-9 | 8 | | |
| 23..... | 1-2 | 26 | 1-2 | 26 | 0-9 | 8 | 0-9 | 8 | | |
| 24..... | 1-2 | 26 | 1-1 | 20 | 0-9 | 8 | 0-9 | 8 | | |
| 25..... | 1-1 | 20 | 1-0 | 14 | 0-9 | 8 | 0-9 | 8 | | |
| 26..... | 1-1 | 20 | 1-0 | 14 | 0-9 | 8 | 0-9 | 8 | | |
| 27..... | 1-1 | 20 | 1-0 | 14 | 0-8 | 5 | 0-9 | 8 | | |
| 28..... | 1-2 | 26 | 0-8 | 4 | 0-8 | 4 | 0-9 | 8 | | |
| 29..... | 1-2 | 26 | 1-1 | 20 | 0-8 | 4 | 0-9 | 8 | | |
| 30..... | 1-2 | 26 | 1-0 | 14 | 0-8 | 4 | 0-9 | 8 | | |
| 31..... | | | 1-0 | 14 | 0-8 | 4 | | | | |

GREEN RIVER AT NAIRN FALLS (1035).

Location.—Five miles from the mouth, and 46 miles from Cheakamus.

Records available.—Daily discharges, November and December, 1913; January to December, 1914.

Drainage area.—Drainage areas are measured from the provincial map of 1912 (scale 17.7 miles to 1 inch). Area above gauging station is 180 square miles.

Gauge.—Sloping staff gauge bolted to rocks about 150 yards above falls on left bank. Referred to three bench-marks. Readings taken daily.

Channel.—Wide and fairly deep. Rock and gravel bottom, a good metering section.

Discharge measurements.—Twelve meter measurements taken during 1913, 1914 and 1915 defining the curve quite well for all except the very highest stages.

Winter flow.—Stream is open all year. Slight ice effect in very cold weather.

Accuracy.—Curve fairly well defined; daily gauge readings.

6 GEORGE V, A. 1916

DISCHARGE MEASUREMENTS of Green River above Nairn Falls, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|----------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Nov. 18..... | Keys & Cline..... | 1046 | 84 | 264 | 3.4 | 3.80 | 918 ¹ |
| 1914. | | | | | | | |
| June 1..... | Keys & Hughes..... | 1046 | 100 | 566 | 4.4 | 6.50 | 2,530 |
| July 16..... | H. C. Hughes..... | 1046 | 105 | 827 | 5.7 | 8.75 | 4,710 |
| Aug. 11..... | do..... | 1046 | 98 | 658 | 4.2 | 6.60 | 2,780 |
| Sept. 8..... | do..... | 1046 | 92 | 533 | 3.6 | 5.88 | 1,938 |
| Nov. 26..... | Dobbie & Hughes..... | 1057 | 87 | 503 | 4.7 | 6.20 | 2,390 |
| Dec. 28..... | E. C. Dobbie..... | 1057 | 73 | 203 | 1.6 | 2.60 | 370 ² |
| 1915. | | | | | | | |
| Jan. 21..... | E. C. Dobbie..... | 1057 | 78 | 185 | 1.2 | 2.10 | 231 |
| Feb. 6..... | Hughes & Dobbie..... | 1057 | 78 | 167 | 1.4 | 2.15 | 238 |
| Mar. 9..... | E. C. Dobbie..... | 1057 | 78 | 202 | 1.6 | 2.35 | 327 |
| Mar. 14..... | do..... | 1057 | 78 | 230 | 1.9 | 2.68 | 441 |
| Mar. 15..... | do..... | 1057 | 78 | 354 | 3.2 | 4.25 | 1,140 |

¹Station established.²Section probably affected by ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1913.

| Day. | November. | | December. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 2.1 | 240 |
| 2..... | | | 2.3 | 300 |
| 3..... | | | 2.3 | 300 |
| 4..... | | | 2.2 | 270 |
| 5..... | | | 2.1 | 240 |
| 6..... | | | 2.0 | 210 |
| 7..... | | | 2.1 | 240 |
| 8..... | | | 2.0 | 210 |
| 9..... | | | 1.7 | 120 |
| 10..... | | | 1.7 | 120 |
| 11..... | | | 1.8 | 150 |
| 12..... | | | 1.8 | 150 |
| 13..... | | | 1.9 | 180 |
| 14..... | | | 2.0 | 210 |
| 15..... | | | 2.3 | 300 |
| 16..... | | | 2.4 | 330 |
| 17..... | | | 2.4 | 330 |
| 18..... | | | 2.3 | 300 |
| 19..... | | | 2.2 | 270 |
| 20..... | 2.4 | 330 | 1.9 | 180 |
| 21..... | 2.4 | 330 | 1.8 | 150 |
| 22..... | 2.5 | 360 | 1.8 | 150 |
| 23..... | 2.5 | 360 | 1.8 | 150 |
| 24..... | 2.3 | 300 | 1.8 | 150 |
| 25..... | 2.1 | 240 | 1.8 | 150 |
| 26..... | 2.2 | 270 | 1.8 | 150 |
| 27..... | 2.1 | 240 | 1.8 | 150 |
| 28..... | 2.3 | 300 | 1.8 | 150 |
| 29..... | 2.3 | 300 | 1.7 | 120 |
| 30..... | 2.3 | 300 | 1.7 | 120 |
| 31..... | | | 1.7 | 120 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.7 | 120 | 1.7 | 120 | 2.2 | 270 | 3.5 | 750 | 6.0 | 2,200 | 6.3 | 2,440 |
| 2 | 1.7 | 120 | 1.7 | 120 | 2.2 | 270 | 3.5 | 750 | | | 5.9 | 2,120 |
| 3 | 1.8 | 150 | 1.7 | 120 | 2.4 | 330 | 3.6 | 800 | | | 5.7 | 1,980 |
| 4 | 2.1 | 240 | 1.7 | 120 | 2.4 | 330 | 3.9 | 940 | | | 5.5 | 1,850 |
| 5 | 2.6 | 400 | 1.7 | 120 | 2.4 | 330 | 5.5 | 1,850 | | | 3.8 | 890 |
| 6 | 4.0 | 990 | 1.7 | 120 | 2.5 | 360 | 5.6 | 1,910 | | | 3.1 | 580 |
| 7 | 3.8 | 890 | 1.7 | 120 | 2.6 | 400 | 5.6 | 1,910 | | | 3.9 | 940 |
| 8 | 3.5 | 750 | 1.7 | 120 | 2.6 | 400 | 5.6 | 1,910 | | | 4.3 | 1,150 |
| 9 | 2.9 | 500 | 1.7 | 120 | 2.6 | 400 | 5.7 | 1,980 | | | 6.3 | 2,440 |
| 10 | 2.6 | 400 | 1.7 | 120 | 2.6 | 400 | 5.7 | 1,980 | | | 6.5 | 2,600 |
| 11 | 2.5 | 360 | 1.7 | 120 | 2.6 | 400 | 5.7 | 1,980 | | | 6.9 | 2,950 |
| 12 | 2.5 | 360 | 1.7 | 120 | 2.7 | 430 | 5.9 | 2,120 | | | 7.2 | 3,200 |
| 13 | 2.4 | 330 | 1.8 | 150 | 3.5 | 750 | 6.0 | 2,200 | | | 9.1 | 5,050 |
| 14 | 2.4 | 330 | 1.9 | 180 | 4.1 | 1,050 | 6.1 | 2,280 | | | 9.2 | 5,150 |
| 15 | 2.1 | 240 | 1.9 | 180 | 3.6 | 800 | 6.1 | 2,280 | | | 9.9 | 5,850 |
| 16 | 2.0 | 210 | 1.9 | 180 | 3.8 | 890 | 6.0 | 2,200 | | | 10.1 | 6,000 |
| 17 | 2.0 | 210 | 1.9 | 180 | 3.7 | 850 | 6.0 | 2,200 | 5.9 | 2,120 | 10.2 | 6,100 |
| 18 | 2.0 | 210 | 1.9 | 180 | 4.4 | 1,200 | 6.0 | 2,200 | 6.0 | 2,200 | 10.1 | 6,000 |
| 19 | 2.0 | 210 | 2.0 | 210 | 4.7 | 1,350 | 6.0 | 2,200 | 4.5 | 1,250 | 8.9 | 4,900 |
| 20 | 1.9 | 180 | 2.0 | 210 | 5.1 | 1,580 | 6.0 | 2,200 | 3.8 | 890 | 8.3 | 4,300 |
| 21 | 1.9 | 180 | 2.0 | 210 | 5.1 | 1,580 | 5.9 | 2,120 | 4.3 | 1,150 | 7.3 | 3,300 |
| 22 | 1.8 | 150 | 2.0 | 210 | 5.1 | 1,580 | 5.8 | 2,050 | 4.1 | 1,050 | 7.3 | 3,300 |
| 23 | 1.8 | 150 | 2.0 | 210 | 5.3 | 1,710 | 5.7 | 1,980 | 4.1 | 1,050 | 7.0 | 3,050 |
| 24 | 1.8 | 150 | 2.1 | 240 | 5.0 | 1,520 | 5.6 | 1,910 | 5.3 | 1,710 | 6.9 | 2,950 |
| 25 | 1.8 | 150 | 2.1 | 240 | 4.7 | 1,350 | 5.5 | 1,850 | 6.3 | 2,440 | 7.8 | 3,800 |
| 26 | 1.7 | 120 | 2.2 | 270 | 4.4 | 1,200 | 5.5 | 1,850 | 5.8 | 2,050 | 8.0 | 4,000 |
| 27 | 1.7 | 120 | 2.2 | 270 | 4.1 | 1,050 | 5.5 | 1,850 | 4.5 | 1,250 | 8.0 | 4,000 |
| 28 | 1.7 | 120 | 2.2 | 270 | 4.0 | 990 | 5.0 | 1,520 | 4.1 | 1,050 | 8.3 | 4,300 |
| 29 | 1.7 | 120 | | | 3.9 | 940 | 5.2 | 1,650 | 4.6 | 1,300 | 8.7 | 4,700 |
| 30 | 1.7 | 120 | | | 3.8 | 890 | 5.3 | 1,710 | 5.3 | 1,710 | 9.9 | 5,850 |
| 31 | 1.7 | 120 | | | 3.6 | 800 | | | 5.7 | 1,980 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Nairn Falls, for 1914
—Con.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 10-1 | 6,000 | 6-3 | 2,440 | 6-3 | 2,440 | 5-9 | 2,120 | 7-5 | 3,500 | 5-1 | 1,580 |
| 2..... | 10-1 | 6,000 | 6-3 | 2,440 | 6-3 | 2,440 | 5-2 | 1,650 | 6-8 | 2,850 | ..... | ..... |
| 3..... | 10-9 | 6,800 | 6-4 | 2,510 | 6-3 | 2,440 | 4-7 | 1,350 | 5-9 | 2,120 | 4-5 | 1,250 |
| 4..... | 11-0 | 6,900 | 6-9 | 2,950 | 6-3 | 2,440 | 4-1 | 1,050 | 5-5 | 1,850 | 3-9 | 940 |
| 5..... | 10-7 | 6,600 | 7-0 | 3,050 | 6-3 | 2,440 | 3-9 | 940 | 5-0 | 1,520 | ..... | ..... |
| 6..... | 9-1 | 5,050 | 7-4 | 3,400 | 6-3 | 2,440 | 3-6 | 800 | 4-8 | 1,400 | ..... | ..... |
| 7..... | 8-7 | 4,700 | 7-3 | 3,300 | 5-3 | 1,710 | 3-4 | 710 | 4-7 | 1,350 | ..... | ..... |
| 8..... | 8-3 | 4,300 | 6-9 | 2,950 | 5-3 | 1,710 | 3-2 | 620 | 4-8 | 1,400 | ..... | ..... |
| 9..... | 8-3 | 4,300 | 6-7 | 2,760 | 5-2 | 1,650 | 4-3 | 1,150 | 4-9 | 1,460 | ..... | ..... |
| 10..... | 9-1 | 5,050 | 6-7 | 2,760 | 5-5 | 1,850 | 4-6 | 1,300 | 4-7 | 1,350 | ..... | ..... |
| 11..... | 9-2 | 5,150 | 6-6 | 2,670 | 5-7 | 1,980 | 4-3 | 1,150 | 4-6 | 1,300 | ..... | ..... |
| 12..... | 9-3 | 5,250 | 6-6 | 2,670 | 5-2 | 1,650 | 4-0 | 990 | 4-5 | 1,250 | ..... | ..... |
| 13..... | 9-3 | 5,250 | 7-2 | 3,200 | 5-0 | 1,520 | 10-5 | 6,400 | 4-5 | 1,250 | 2-9 | 500 |
| 14..... | 9-3 | 5,250 | 7-4 | 3,400 | 5-0 | 1,520 | 10-0 | 5,900 | 4-4 | 1,200 | 2-95 | 520 |
| 15..... | 9-3 | 5,250 | 7-2 | 3,200 | 4-8 | 1,400 | 12-3 | 8,200 | 4-3 | 1,150 | 2-9 | 500 |
| 16..... | 8-9 | 4,900 | 7-2 | 3,200 | ..... | ..... | 13-8 | 9,700 | 4-1 | 1,050 | 2-85 | 480 |
| 17..... | 8-9 | 4,900 | 6-9 | 2,950 | ..... | ..... | 12-5 | 8,400 | 4-0 | 990 | 3-0 | 540 |
| 18..... | 8-9 | 4,900 | 6-9 | 2,950 | ..... | ..... | 8-5 | 4,500 | 3-9 | 940 | 3-2 | 620 |
| 19..... | 8-9 | 4,900 | 6-9 | 2,950 | ..... | ..... | 8-0 | 4,000 | 4-0 | 990 | 3-0 | 540 |
| 20..... | 8-9 | 4,900 | 6-9 | 2,950 | ..... | ..... | 7-3 | 3,300 | 4-2 | 1,100 | 3-0 | 540 |
| 21..... | 8-1 | 4,100 | 6-9 | 2,950 | ..... | ..... | 6-5 | 2,600 | 4-3 | 1,150 | 3-0 | 540 |
| 22..... | 7-3 | 3,300 | 6-9 | 2,950 | ..... | ..... | 5-5 | 1,850 | 4-5 | 1,250 | 2-9 | 500 |
| 23..... | 7-3 | 3,300 | 6-9 | 2,950 | ..... | ..... | 4-7 | 1,350 | 4-5 | 1,250 | 2-85 | 480 |
| 24..... | 7-4 | 3,400 | 6-9 | 2,950 | ..... | ..... | 4-1 | 1,050 | 4-6 | 1,300 | 2-8 | 470 |
| 25..... | 7-3 | 3,300 | 6-7 | 2,760 | ..... | ..... | 4-8 | 1,400 | 8-6 | 4,600 | 2-8 | 470 |
| 26..... | 7-3 | 3,300 | 6-5 | 2,600 | ..... | ..... | 4-9 | 1,460 | 6-3 | 2,440 | 2-7 | 430 |
| 27..... | 7-1 | 3,150 | 6-7 | 2,760 | ..... | ..... | 5-1 | 1,580 | 3-7 | 850 | 2-6 | 400 |
| 28..... | 6-3 | 2,440 | 6-7 | 2,760 | ..... | ..... | 5-9 | 2,120 | 3-8 | 890 | 2-6 | 400 |
| 29..... | 6-3 | 2,440 | 6-3 | 2,440 | ..... | ..... | 7-5 | 3,500 | 3-7 | 850 | 2-5 | 360 |
| 30..... | 6-3 | 2,440 | 6-3 | 2,440 | ..... | ..... | 6-8 | 2,850 | 4-6 | 1,300 | 2-5 | 360 |
| 31..... | 6-3 | 2,440 | 6-3 | 2,440 | ..... | ..... | 6-7 | 2,760 | ..... | ..... | 2-5 | 360 |

MONTHLY DISCHARGE of Green River at Nairn Falls, for 1913.

(Drainage area, 180 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|---------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| December..... | 330 | 120 | 200 | 1-1 | 1-3 | 12,300 |

Accuracy "B".

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MONTHLY DISCHARGE of Green River at Nairn Falls, for 1914.

(Drainage area, 180 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 990 | 120 | 280 | 1.5 | 1.7 | 17,200 | B |
| February..... | 270 | 120 | 172 | 0.9 | 1.0 | 9,550 | B |
| March..... | 1,710 | 270 | 851 | 4.7 | 5.4 | 52,300 | B |
| April..... | 2,280 | 750 | 1,838 | 10.2 | 11.4 | 109,000 | B |
| May..... | | | | | | | |
| June..... | 6,100 | 580 | 3,524 | 19.6 | 21.9 | 209,000 | B |
| July..... | 6,900 | 2,440 | 4,515 | 25.1 | 28.9 | 277,000 | B |
| August..... | 3,400 | 2,440 | 2,861 | 15.9 | 18.3 | 176,000 | B |
| September..... | | | | | | | |
| October..... | 9,700 | 620 | 2,800 | 15.6 | 17.9 | 172,000 | C |
| November..... | 4,600 | 850 | 1,530 | 8.5 | 9.5 | 91,000 | B |
| The period..... | 9,700 | 120 | | | | | |

GREEN RIVER AT GREEN LAKE (1041).

Location.—Highway bridge at mouth of the lake, 42 miles from Squamish.

Records available.—Daily discharges from January to December, 1914.

Drainage area.—Twenty-four square miles; measured from the provincial map of 1912 (scale 3 miles to 1 inch).

Gauge.—Graduated staff. Readings taken by measuring to water surface, from permanent point on the bridge.

Channel.—Narrow and fairly deep. Strewn with boulders.

Discharge measurements.—Six discharge measurements define the rating curve fairly well.

Winter flow.—Open all winter.

Accuracy.—C and D; change in section —

DISCHARGE MEASUREMENTS of Green River at Green Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|----------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Nov. 22..... | H. J. E. Keyes..... | 1,046 | 26 | 51.3 | 3.00 | 1.32 | 152 ¹ |
| 1914. | | | | | | | |
| March 17..... | do..... | 1,046 | 33 | 58.0 | 2.71 | 1.47 | 157 ² |
| May 28..... | Keys & Hughes..... | 1,046 | 37 | 96.6 | 4.37 | 2.00 | 422 |
| July 21..... | H. C. Hughes..... | 1,046 | 39 | 93.0 | 5.62 | 2.32 | 522 |
| Aug. 15..... | do..... | 1,046 | 39 | 89.2 | 4.90 | 2.15 | 435 |
| Sept. 10..... | do..... | 1,046 | 34 | 73.1 | 2.92 | 1.35 | 215 |
| Dec. 5..... | Dobbie & Hughes..... | 1,057 | 40 | 102.0 | 2.38 | 1.80 | 243 ³ |

¹Station established, gauge not referenced. ²Surface measurement, former gauge gone; new gauge put in and referenced.

³Channel changed by treshot and logs wedged under bridge.

MONTHLY DISCHARGE of Green River at Green Lake, for 1914.

(Drainage area, 24 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total acre-feet. | |
| January..... | 700 | 145 | 245 | 10.2 | 11.8 | 15,100 | C |
| February..... | 180 | 120 | 137 | 5.7 | 6.0 | 7,610 | D |
| March..... | 520 | 145 | 270 | 11.2 | 12.9 | 16,600 | C |
| April..... | 1,000 | 220 | 598 | 24.9 | 27.8 | 35,580 | D |
| May..... | 850 | 310 | 635 | 26.2 | 30.3 | 39,000 | D |
| June..... | 1,150 | 400 | 648 | 27.0 | 30.1 | 38,600 | D |
| July..... | 1,150 | 440 | 764 | 31.9 | 36.8 | 47,000 | D |
| August..... | 560 | 310 | 399 | 16.6 | 19.1 | 24,500 | C |
| September..... | 600 | 160 | 267 | 11.1 | 12.4 | 15,900 | C |
| October..... | 1,650 | 160 | 567 | 23.6 | 27.2 | 34,900 | D |
| November..... | 1,080 | 220 | 440 | 18.3 | 20.4 | 26,200 | D |
| December..... | 530 | 90 | 154 | 6.4 | 7.4 | 9,500 | C |
| The year..... | 1,650 | 90 | 427 | 17.8 | 24.2 | 310,490 | C |

DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Green Lake, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-10 | 160 | 1-20 | 180 | 1-00 | 145 | 1-60 | 280 | 2-80 | 750 | 2-30 | 520 |
| 2..... | 1-10 | 160 | 1-20 | 180 | 1-00 | 145 | 1-50 | 250 | 2-70 | 700 | 2-70 | 700 |
| 3..... | 1-20 | 180 | 1-10 | 160 | 1-00 | 145 | 1-40 | 220 | 2-80 | 750 | 2-80 | 750 |
| 4..... | 1-30 | 200 | 1-10 | 160 | 1-00 | 145 | 1-40 | 220 | 2-60 | 650 | 2-60 | 650 |
| 5..... | 1-60 | 280 | 1-00 | 145 | 1-00 | 145 | 1-10 | 310 | 2-60 | 650 | 2-30 | 520 |
| 6..... | 2-10 | 440 | 1-00 | 145 | 1-00 | 145 | 2-40 | 560 | 2-70 | 700 | 2-10 | 440 |
| 7..... | 2-60 | 650 | 1-10 | 160 | 1-00 | 145 | 2-30 | 520 | 2-80 | 750 | 2-10 | 440 |
| 8..... | 2-70 | 700 | 0-90 | 130 | 1-00 | 145 | 2-30 | 520 | 2-80 | 750 | 2-00 | 400 |
| 9..... | 2-50 | 600 | 0-90 | 130 | 1-00 | 145 | 2-30 | 520 | 2-90 | 800 | 2-00 | 400 |
| 10..... | 1-90 | 370 | 0-90 | 130 | 1-10 | 160 | 2-40 | 560 | 2-90 | 800 | 2-00 | 400 |
| 11..... | 1-70 | 310 | 0-90 | 130 | 1-20 | 180 | 2-50 | 600 | 2-90 | 800 | 2-00 | 400 |
| 12..... | 1-40 | 220 | 0-90 | 130 | 1-20 | 180 | 2-50 | 600 | 3-00 | 850 | 2-30 | 520 |
| 13..... | 1-30 | 200 | 0-80 | 120 | 1-30 | 200 | 2-50 | 600 | 3-00 | 850 | 2-60 | 650 |
| 14..... | 1-30 | 200 | 0-90 | 130 | 1-40 | 220 | 2-60 | 650 | 2-80 | 750 | 2-70 | 700 |
| 15..... | 1-30 | 200 | 0-90 | 130 | 1-40 | 220 | 2-60 | 650 | 2-80 | 750 | 3-00 | 850 |
| 16..... | 1-30 | 200 | 0-90 | 130 | 1-40 | 220 | 2-50 | 600 | 2-60 | 650 | 3-30 | 1,000 |
| 17..... | 1-20 | 180 | 0-90 | 130 | 1-50 | 250 | 2-85 | 780 | 2-50 | 600 | 3-60 | 1,150 |
| 18..... | 1-20 | 180 | 0-90 | 130 | 1-60 | 280 | 2-70 | 700 | 2-50 | 600 | 3-30 | 1,000 |
| 19..... | 1-20 | 180 | 0-90 | 130 | 1-80 | 340 | 3-30 | 1,000 | 2-50 | 600 | 3-10 | 900 |
| 20..... | 1-10 | 160 | 0-90 | 130 | 2-00 | 400 | 3-05 | 870 | 2-45 | 580 | 2-80 | 750 |
| 21..... | 1-10 | 160 | 0-90 | 130 | 2-10 | 440 | 3-05 | 870 | 2-45 | 580 | 2-50 | 600 |
| 22..... | 1-20 | 180 | 0-80 | 120 | 2-10 | 440 | 2-90 | 800 | 2-45 | 580 | 2-40 | 560 |
| 23..... | 1-20 | 180 | 0-80 | 120 | 2-30 | 520 | 2-80 | 750 | 2-40 | 560 | 2-30 | 520 |
| 24..... | 1-10 | 160 | 0-80 | 120 | 2-20 | 480 | 2-80 | 750 | 2-40 | 560 | 2-30 | 520 |
| 25..... | 1-10 | 160 | 0-90 | 130 | 2-10 | 440 | 2-60 | 650 | 2-40 | 560 | 2-50 | 600 |
| 26..... | 1-10 | 160 | 0-90 | 130 | 2-10 | 440 | 2-60 | 650 | 2-30 | 520 | 2-50 | 600 |
| 27..... | 1-00 | 145 | 1-00 | 145 | 2-00 | 400 | 2-60 | 650 | 2-00 | 480 | 2-50 | 600 |
| 28..... | 1-00 | 145 | 1-00 | 145 | 1-90 | 370 | 2-50 | 600 | 2-00 | 480 | 2-70 | 700 |
| 29..... | 1-10 | 160 | | | 1-80 | 340 | 2-50 | 600 | 1-70 | 310 | 2-80 | 750 |
| 30..... | 1-20 | 180 | | | 1-70 | 310 | 2-50 | 600 | 1-80 | 340 | 3-00 | 850 |
| 31..... | 1-20 | 180 | | | 1-60 | 280 | | | 1-90 | 370 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Green River at Green Lake, for 1914
—Con.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-90 | 800 | 2-10 | 440 | 1-10 | 160 | 1-60 | 280 | 3-20 | 950 | 2-05 | 310 |
| 2 | 3-10 | 900 | 2-10 | 440 | 1-20 | 180 | 1-90 | 370 | 3-45 | 1,080 | 2-65 | 530 |
| 3 | 3-50 | 1,100 | 2-10 | 440 | 1-10 | 160 | 2-50 | 600 | 3-05 | 690 | 2-35 | 410 |
| 4 | 3-60 | 1,150 | 2-00 | 400 | 1-10 | 160 | 2-30 | 520 | 2-65 | 530 | 2-15 | 340 |
| 5 | 3-60 | 1,150 | 2-00 | 400 | 1-20 | 180 | 2-10 | 440 | 2-45 | 450 | 1-80 | 240 |
| 6 | 3-10 | 900 | 2-10 | 440 | 1-10 | 160 | 1-40 | 220 | 2-35 | 410 | 1-60 | 190 |
| 7 | 3-00 | 850 | 2-30 | 520 | 1-20 | 180 | 0-90 | 130 | 2-35 | 410 | 1-60 | 190 |
| 8 | 2-90 | 800 | 2-40 | 560 | 1-30 | 200 | 1-30 | 200 | 2-45 | 450 | 1-50 | 170 |
| 9 | 2-90 | 800 | 2-30 | 520 | 1-40 | 220 | 1-30 | 200 | 2-45 | 450 | 1-50 | 170 |
| 10 | 3-00 | 850 | 2-30 | 520 | 1-30 | 200 | 1-10 | 160 | 2-25 | 380 | 1-40 | 150 |
| 11 | 3-00 | 850 | 2-20 | 480 | 1-30 | 200 | 1-20 | 180 | 2-25 | 380 | 1-20 | 110 |
| 12 | 2-90 | 800 | 2-20 | 480 | 1-30 | 200 | 2-00 | 400 | 2-15 | 340 | 1-20 | 110 |
| 13 | 3-20 | 950 | 2-10 | 440 | 1-10 | 160 | 2-60 | 650 | 2-25 | 380 | 1-10 | 90 |
| 14 | 3-40 | 1,050 | 2-10 | 440 | 1-10 | 160 | 3-20 | 950 | 2-05 | 310 | 1-30 | 130 |
| 15 | 3-10 | 900 | 2-10 | 440 | 1-10 | 160 | 2-60 | 650 | 2-05 | 310 | 1-30 | 130 |
| 16 | 3-00 | 850 | 2-00 | 400 | 1-10 | 160 | 3-30 | 1,000 | 2-05 | 310 | 1-30 | 130 |
| 17 | 3-00 | 850 | 2-00 | 400 | 1-70 | 310 | 4-60 | 1,650 | 1-95 | 280 | 1-20 | 110 |
| 18 | 3-10 | 900 | 1-90 | 370 | 2-30 | 520 | 3-60 | 1,150 | 1-85 | 260 | 1-20 | 110 |
| 19 | 3-10 | 900 | 1-90 | 370 | 2-50 | 600 | 3-40 | 1,050 | 1-85 | 260 | 1-20 | 110 |
| 20 | 2-90 | 800 | 1-80 | 340 | 2-20 | 480 | 3-10 | 900 | 1-75 | 220 | 1-10 | 90 |
| 21 | 2-60 | 650 | 1-80 | 340 | 1-80 | 340 | 2-80 | 750 | 1-75 | 220 | 1-00 | 75 |
| 22 | 2-30 | 520 | 1-90 | 370 | 1-60 | 280 | 2-30 | 520 | 1-95 | 280 | 1-00 | 75 |
| 23 | 2-30 | 520 | 1-70 | 310 | 1-50 | 250 | 2-40 | 560 | 2-35 | 410 | 1-10 | 90 |
| 24 | 2-30 | 520 | 1-70 | 310 | 1-50 | 250 | 2-20 | 480 | 2-65 | 530 | 1-10 | 90 |
| 25 | 2-20 | 480 | 1-80 | 340 | 1-50 | 250 | 2-30 | 520 | 2-95 | 650 | 1-10 | 90 |
| 26 | 2-20 | 480 | 1-70 | 310 | 1-60 | 280 | 2-20 | 480 | 3-05 | 690 | 1-10 | 90 |
| 27 | 2-20 | 480 | 1-70 | 310 | 1-70 | 310 | 2-30 | 520 | 2-65 | 530 | 1-10 | 90 |
| 28 | 2-10 | 440 | 1-80 | 340 | 1-80 | 340 | 2-20 | 480 | 2-25 | 380 | 1-10 | 90 |
| 29 | 2-20 | 480 | 1-80 | 340 | 1-90 | 370 | 2-10 | 410 | 2-15 | 340 | 1-10 | 90 |
| 30 | 2-20 | 480 | 1-70 | 310 | 2-50 | 600 | 2-20 | 480 | 2-05 | 310 | 1-10 | 90 |
| 31 | 2-20 | 480 | 1-50 | 250 | ..... | ..... | 2-60 | 650 | ..... | ..... | 1-10 | 90 |

LALUWISSIN CREEK (1050).

Location.—Above the irrigation ditches about 1 mile from the mouth and 26 miles from Lillooet.

Records available.—Daily discharges from June 17, 1914, to September 30, 1914, discontinued at end of irrigation season.

Drainage Area.—Twenty square miles (measured from the provincial map of 1913, scale 12 miles to 1 inch).

Gauge.—Vertical staff gauge about 200 yards above irrigation ditches, referenced to three bench-marks. Readings daily.

Channel.—Wide and shallow, strewn with boulders and coarse gravel. The current is fairly swift. The metering section is quite a good one.

Discharge Measurements.—Three discharge measurements in 1914 define the rating curve fairly well for the two and intermediate stages of the water.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should ensure a fair degree of accuracy for the variation during the irrigation season.

LALUWISSIN CREEK (1050).

Laluwissin creek has its source in the mountains to the south-east of Lillooet. Some of the peaks in its vicinity attain an altitude of 6,800 feet. It discharges into the Fraser river 26 miles below Lillooet at an elevation of 450 feet. The drainage area is 25 square miles.

The climate in the Laluwissin creek watershed is much similar to that of the Lillooet district generally. The summers are quite hot and the winters rather severe. The mean annual precipitation in the valley is about 10 inches.

The Fraser river benches near the mouth of Laluwissin creek are well suited to cultivation. At present most of the normal flow of the stream is being used to irrigate these benches. No attempt has yet been made to store the high-water flow which occurs during the spring and early summer. It is reported that the upper part of the stream runs through large swamps and meadows, and it is very probable that these meadows could be utilized as storage reservoirs; a pack trail follows the stream up to the meadows.

DISCHARGE MEASUREMENTS of Laluwissin Creek above intake at irrigation ditches, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|----------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| June 17..... | Keys and Hughes..... | 1,046 | 6-0 | 7-95 | 1-62 | 1-40 | 12-9 ¹ |
| July 31..... | H. C. Hughes..... | 1,046 | 6-0 | 6-20 | 1-05 | 1-00 | 6-5 |
| Sept. 13..... | do..... | 1,046 | 6-0 | 5-35 | .88 | 1-00 | 4-7 |

¹Station established.

MONTHLY DISCHARGE of Laluwissin Creek above irrigation ditches, for 1914.

(Drainage area, 25 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| July..... | 11 | 6 | 7-9 | 0-3 | 0-3 | 490 |
| August..... | 6 | 5 | 5-3 | 0-2 | 0-2 | 330 |
| September..... | 6 | 5 | 5-4 | 0-2 | 0-2 | 320 |

Accuracy "D."

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DAILY GAUGE HEIGHT AND DISCHARGE of Lалуwessin Creek above irrigation ditches, for 1914.

| DAY. | June. | | July. | | August. | | September. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 |
| 2 | | | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 |
| 3 | | | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 |
| 4 | | | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 |
| 5 | | | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 |
| 6 | | | 1-3 | 11 | 1-0 | 6 | 0-9 | |
| 7 | | | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 |
| 8 | | | 1-2 | 9 | 1-0 | 6 | 0-9 | 5 |
| 9 | | | 1-2 | 9 | 1-0 | 6 | 0-9 | 5 |
| 10 | | | 1-2 | 9 | 1-0 | 6 | 1-0 | 6 |
| 11 | | | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 12 | | | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 13 | | | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 14 | | | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 15 | | | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 16 | | | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 17 | | | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 18 | 1-4 | 13 | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 19 | 1-4 | 13 | 1-1 | 7 | 0-9 | 5 | 0-9 | 5 |
| 20 | 1-4 | 13 | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 21 | 1-4 | 13 | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 22 | 1-3 | 11 | 1-1 | 7 | 0-9 | 5 | 1-0 | 6 |
| 23 | 1-3 | 11 | 1-1 | 7 | 0-9 | 5 | 0-9 | 5 |
| 24 | 1-3 | 11 | 1-1 | 7 | 0-9 | 5 | 0-9 | 5 |
| 25 | 1-4 | 13 | 1-0 | 6 | 0-9 | 5 | 0-9 | 5 |
| 26 | 1-4 | 13 | 1-0 | 6 | 0-9 | 5 | 0-9 | 5 |
| 27 | 1-4 | 13 | 1-0 | 6 | 0-9 | 5 | 0-9 | 5 |
| 28 | 1-4 | 13 | 1-0 | 6 | 0-9 | 5 | 0-9 | 5 |
| 29 | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 | 0-9 | 5 |
| 30 | 1-3 | 11 | 1-0 | 6 | 0-9 | 5 | 0-9 | 5 |
| 31 | | | 1-0 | 6 | 0-9 | 5 | | |

LILLOOET RIVER (1038).

Location.—Government highway bridge at Agerton, 57 miles from Cheakamus, 8 miles above Lillooet lake, and 2 miles above the mouth of Green river.

Records Available.—Daily discharges.—November 16 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Above mouth is 2,200 square miles; above the lower end of Lillooet lake, 1,600 square miles; above upper end of lake, 1,300 square miles; above gauging station, 800 square miles.

Gauge.—Vertical staff gauge nailed to central pier of bridge. Referenced to three bench-marks. Gauge readings taken daily.

Channel.—Wide and deep, smooth, sandy bed. An excellent measuring section.

Discharge Measurements.—Five discharge measurements taken during 1914 define the curve very well for all stages of the water.

Winter Flow.—The stream is sometimes frozen over in winter.

Accuracy.—Rating curve well defined and daily gauge readings give good accuracy.

6 GEORGE V, A. 1916

DISCHARGE MEASUREMENTS of Lillooet River near Agerton above lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Nov. 16..... | Keys & Cline..... | 1046 | 168 | 645 | 2.63 | 1.83 | 1,693 ¹ |
| 1914. | | | | | | | |
| March 28..... | H. J. E. Keys..... | 1046 | 174 | 636 | 2.42 | 1.97 | 1,540 |
| May 31..... | Keys & Hughes..... | 1046 | 185 | 1,380 | 3.54 | 4.92 | 4,880 |
| June 28..... | Hughes..... | 1046 | 188 | 2,063 | 4.37 | 7.60 | 9,000 |
| Aug. 10..... | do..... | 1046 | 187 | 1,831 | 4.00 | 6.76 | 7,400 |
| July 15..... | do..... | 1046 | 188 | 2,692 | 6.15 | 10.4 | 16,500 |

¹Station established.

MONTHLY DISCHARGE of Lillooet River 6 miles above Lillooet Lake, for 1914.

(Drainage area, 800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 1,480 | 950 | 1,280 | 1.60 | 1.84 | 79,000 | B |
| February..... | 980 | 950 | 960 | 1.20 | 1.25 | 53,000 | B |
| March..... | 2,670 | 980 | 1,770 | 2.21 | 2.55 | 109,000 | B |
| April..... | 3,750 | 1,730 | 2,860 | 3.57 | 3.98 | 170,000 | B |
| May..... | 9,250 | 3,750 | 5,870 | 7.34 | 8.46 | 361,000 | B |
| June..... | 16,500 | 4,930 | 9,140 | 11.42 | 12.74 | 544,000 | B |
| July..... | 18,300 | 6,800 | 13,010 | 16.25 | 19.98 | 799,000 | C |
| August..... | 14,700 | 7,500 | 10,560 | 13.20 | 15.22 | 648,000 | B |
| September..... | 7,850 | 3,200 | 5,030 | 6.29 | 7.02 | 299,000 | B |
| October..... | 19,200 | 2,670 | 6,590 | 8.24 | 9.50 | 405,000 | B |
| November..... | 4,930 | 2,470 | 3,540 | 4.42 | 4.93 | 211,000 | B |
| December..... | 3,200 | 1,480 | 1,890 | 2.36 | 2.71 | 116,000 | B |
| The year..... | 19,200 | 950 | 5,270 | 6.51 | 90.18 | 3,794,000 | B |

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DAILY GAUGE HEIGHT AND DISCHARGE of Lillooet River 6 miles above Lillooet Lake, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-5 | 1,330 | Frozen | 950 | 1-0 | 980 | 2-0 | 1,730 | 4-0 | 3,750 | 6-0 | 6,250 |
| 2 | 1-6 | 1,400 | | 950 | 1-4 | 1,260 | 2-0 | 1,730 | 4-8 | 4,690 | 7-5 | 8,820 |
| 3 | 1-6 | 1,400 | | 950 | 1-4 | 1,260 | 2-0 | 1,730 | 4-6 | 4,446 | 8-0 | 9,970 |
| 4 | 1-6 | 1,400 | | 950 | 1-4 | 1,260 | 2-0 | 1,730 | 4-5 | 4,320 | 7-5 | 8,820 |
| 5 | 1-6 | 1,400 | | 950 | 1-4 | 1,260 | 2-0 | 1,730 | 4-5 | 4,320 | 6-9 | 7,660 |
| 6 | 1-6 | 1,400 | | 950 | 1-4 | 1,260 | 3-0 | 2,670 | 4-5 | 4,320 | 6-5 | 6,690 |
| 7 | 1-7 | 1,480 | | 950 | 1-4 | 1,260 | 3-2 | 2,870 | 4-5 | 4,320 | 5-5 | 5,570 |
| 8 | 1-7 | 1,480 | | 950 | 1-4 | 1,260 | 3-2 | 2,870 | 4-5 | 4,320 | 5-0 | 4,930 |
| 9 | 1-7 | 1,480 | | 950 | 1-4 | 1,260 | 3-2 | 2,870 | 4-8 | 4,690 | 5-0 | 4,930 |
| 10 | 1-7 | 1,480 | | 950 | 1-4 | 1,260 | 3-5 | 3,200 | 5-0 | 4,930 | 5-8 | 5,970 |
| 11 | 1-7 | 1,480 | | 950 | 1-4 | 1,260 | 3-5 | 3,200 | 5-5 | 5,570 | 6-4 | 6,840 |
| 12 | 1-7 | 1,480 | | 950 | 1-5 | 1,330 | 3-5 | 3,200 | 5-5 | 5,570 | 6-8 | 7,480 |
| 13 | 1-6 | 1,400 | | 950 | 1-5 | 1,330 | 3-8 | 3,530 | 6-0 | 6,250 | 7-7 | 9,250 |
| 14 | 1-6 | 1,400 | | 950 | 2-0 | 1,730 | 3-8 | 3,530 | 7-0 | 7,850 | 8-2 | 10,500 |
| 15 | 1-6 | 1,400 | Frozen | 950 | 2-0 | 1,730 | 4-0 | 3,750 | 7-0 | 7,850 | 9-5 | 13,900 |
| 16 | 1-6 | 1,400 | | 950 | 2-0 | 1,730 | 4-0 | 3,750 | 6-5 | 6,990 | 10-1 | 15,600 |
| 17 | 1-6 | 1,400 | | 950 | 2-4 | 2,090 | 3-8 | 3,530 | 5-9 | 6,110 | 10-4 | 16,500 |
| 18 | 1-6 | 1,400 | | 950 | 2-0 | 1,730 | 3-5 | 3,200 | 5-7 | 5,830 | 9-7 | 14,500 |
| 19 | 1-6 | 1,400 | | 950 | 2-2 | 1,900 | 3-5 | 3,200 | 5-7 | 5,830 | 9-0 | 12,500 |
| 20 | 1-5 | 1,330 | | 950 | 2-6 | 2,280 | 3-5 | 3,200 | 6-2 | 5,540 | 8-3 | 10,700 |
| 21 | 1-4 | 1,260 | | 950 | 2-8 | 2,470 | 3-6 | 3,310 | 7-0 | 7,850 | 7-8 | 9,500 |
| 22 | 1-4 | 1,260 | 1-0 | 980 | 2-8 | 2,470 | 3-5 | 3,200 | 7-0 | 7,850 | 7-2 | 8,230 |
| 23 | 1-2 | 1,110 | 1-0 | 980 | 3-0 | 2,670 | 3-2 | 2,870 | 7-5 | 8,820 | 6-8 | 7,480 |
| 24 | 1-0 | 980 | 1-0 | 980 | 3-0 | 2,670 | 3-2 | 2,870 | 7-7 | 9,250 | 6-5 | 6,990 |
| 25 | 1-0 | 980 | 1-0 | 980 | 3-0 | 2,670 | 3-2 | 2,870 | 7-0 | 7,850 | 6-8 | 7,480 |
| 26 | Frozen | 950 | 1-0 | 980 | 2-8 | 2,470 | 3-0 | 2,670 | 6-7 | 7,310 | 7-4 | 8,620 |
| 27 | | 950 | 1-0 | 980 | 2-8 | 2,470 | 3-0 | 2,670 | 6-0 | 6,250 | 7-4 | 8,620 |
| 28 | | 950 | 1-0 | 980 | 2-8 | 2,470 | 3-0 | 2,670 | 5-0 | 4,930 | 7-8 | 9,480 |
| 29 | | 950 | | | 2-0 | 1,730 | 3-0 | 2,670 | 4-8 | 4,690 | 8-0 | 9,970 |
| 30 | | 950 | | | 2-0 | 1,730 | 3-2 | 2,870 | 4-8 | 4,690 | 8-2 | 10,400 |
| 31 | | 950 | | | 2-0 | 1,730 | | | 5-0 | 4,930 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Lillooet River 6 miles from Lillooet Lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 9-4 | 13,600 | 8-0 | 10,000 | 6-8 | 7,500 | 4-0 | 3,750 | 5-0 | 4,930 | 3-5 | 3,200 |
| 2..... | 9-9 | 15,000 | 8-5 | 11,200 | 6-8 | 7,500 | 3-8 | 3,530 | 5-0 | 4,930 | 3-2 | 2,870 |
| 3..... | 10-8 | 17,700 | 9-2 | 13,100 | 7-0 | 7,850 | 3-5 | 3,200 | 4-6 | 4,440 | 3-0 | 2,670 |
| 4..... | 10-8 | 17,700 | 9-6 | 14,200 | 6-8 | 7,500 | 3-0 | 2,670 | 4-5 | 4,320 | 3-0 | 2,670 |
| 5..... | 9-8 | 14,700 | 9-0 | 12,500 | 6-7 | 7,300 | 3-2 | 2,870 | 4-5 | 4,320 | 2-8 | 2,470 |
| 6..... | 9-4 | 13,600 | 8-9 | 12,300 | 6-4 | 6,840 | 3-4 | 2,990 | 4-0 | 3,750 | 2-7 | 2,380 |
| 7..... | 8-7 | 11,700 | 7-6 | 9,000 | 6-0 | 6,250 | 3-4 | 2,990 | 3-8 | 3,530 | 2-7 | 2,380 |
| 8..... | 8-7 | 11,700 | 6-6 | 7,200 | 6-5 | 7,000 | 3-8 | 3,530 | 3-7 | 3,420 | 2-8 | 2,470 |
| 9..... | 8-8 | 12,000 | 7-4 | 8,630 | 6-0 | 6,250 | 3-9 | 3,640 | 4-7 | 4,570 | 2-6 | 2,280 |
| 10..... | 9-5 | 13,900 | 7-8 | 9,500 | 5-8 | 5,970 | 4-0 | 3,750 | 4-0 | 3,750 | 2-3 | 2,000 |
| 11..... | 10-0 | 15,300 | 8-2 | 10,400 | 5-2 | 5,180 | 4-0 | 3,750 | 4-2 | 3,970 | 2-0 | 1,730 |
| 12..... | 9-8 | 14,700 | 8-6 | 11,500 | 5-0 | 4,930 | 5-0 | 4,930 | 3-8 | 3,530 | 2-0 | 1,730 |
| 13..... | 10-6 | 17,100 | 9-0 | 12,500 | 4-4 | 4,200 | 8-55 | 11,300 | 3-8 | 3,530 | 2-0 | 1,730 |
| 14..... | 10-5 | 16,800 | 9-8 | 14,700 | 4-2 | 3,970 | 11-3 | 19,200 | 3-6 | 3,310 | 1-8 | 1,570 |
| 15..... | 10-6 | 15,300 | 9-2 | 13,100 | 4-1 | 3,860 | 10-8 | 17,700 | 3-3 | 2,980 | 1-8 | 1,570 |
| 16..... | 9-2 | 13,100 | 9-0 | 12,500 | 3-5 | 3,200 | 11-0 | 18,300 | 3-0 | 2,670 | 1-8 | 1,570 |
| 17..... | 9-5 | 13,900 | 8-6 | 11,500 | 3-8 | 3,530 | 11-2 | 18,900 | 3-0 | 2,670 | 1-8 | 1,570 |
| 18..... | 10-0 | 15,300 | 8-0 | 10,000 | 4-0 | 3,750 | 7-8 | 9,500 | 2-8 | 2,470 | 1-7 | 1,453 |
| 19..... | 10-8 | 17,700 | 8-5 | 11,200 | 3-8 | 3,530 | 6-4 | 6,840 | 2-8 | 2,470 | 1-7 | 1,453 |
| 20..... | 11-0 | 18,300 | 9-0 | 12,500 | 3-5 | 3,200 | 5-8 | 6,000 | 2-8 | 2,470 | 1-7 | 1,480 |
| 21..... | 9-0 | 12,500 | 9-0 | 12,500 | 3-5 | 3,200 | 5-4 | 5,440 | 2-8 | 2,470 | 1-7 | 1,480 |
| 22..... | 7-5 | 8,820 | 9-0 | 12,500 | 3-8 | 3,530 | 4-8 | 4,690 | 3-0 | 2,670 | 1-7 | 1,480 |
| 23..... | 7-5 | 8,820 | 8-4 | 11,000 | 3-8 | 3,530 | 4-5 | 4,320 | 3-0 | 2,670 | 1-8 | 1,570 |
| 24..... | 8-0 | 10,000 | 7-8 | 9,500 | 4-0 | 3,750 | 4-0 | 3,750 | 3-2 | 2,870 | 1-8 | 1,570 |
| 25..... | 8-4 | 10,900 | 7-8 | 9,500 | 4-5 | 4,320 | 4-0 | 3,750 | 4-4 | 4,200 | 1-8 | 1,570 |
| 26..... | 8-7 | 11,700 | 7-5 | 8,280 | 5-0 | 4,930 | 4-2 | 3,970 | 4-8 | 4,700 | 1-8 | 1,570 |
| 27..... | 8-0 | 10,000 | 7-8 | 9,500 | 5-0 | 4,930 | 4-3 | 4,080 | 4-2 | 3,970 | 1-9 | 1,655 |
| 28..... | 6-4 | 6,800 | 7-6 | 9,000 | 4-8 | 4,700 | 4-2 | 3,970 | 4-2 | 3,970 | 1-9 | 1,650 |
| 29..... | 6-8 | 7,500 | 6-8 | 7,500 | 4-5 | 4,320 | 5-0 | 4,930 | 3-8 | 3,530 | 1-8 | 1,570 |
| 30..... | 7-2 | 8,200 | 6-8 | 7,500 | 4-5 | 4,320 | 7-6 | 7,850 | 3-5 | 3,200 | 1-8 | 1,570 |
| 31..... | 7-5 | 8,800 | 6-8 | 7,500 | ..... | ..... | 7-2 | 8,230 | ..... | ..... | 1-8 | 1,570 |

RILEY CREEK (1043).

Location.—Above irrigation ditches, about half a mile from the mouth and 9 miles from Lillooet.

Records Available.—Daily discharges from July 28, 1914, to October 14, 1914, (irrigation season).

Drainage Area.—Five square miles (measured from provincial map of 1913, scale 3 miles to 1 inch).

Gauge.—Vertical staff gauge nailed to old flume just below the falls. Readings every second day.

Channel.—Fairly wide and shallow. The bed consists mainly of solid rock and gravel. The current is swift. The metering section is a good one.

Discharge Measurements.—Two discharge measurements in 1914 define the rating curve fairly well for the variations during the irrigation season.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—D.

SESSIONAL PAPER No. 25e

RILEY CREEK (1043).

Riley creek rises in the mountains to the south of Lillooet and discharges into the Fraser river about 9 miles below Lillooet at an elevation of about 620 feet. The drainage area is about 5 square miles.

The climate in the Riley Creek basin is much similar to that of the Lillooet district generally. The summers are quite hot and the winters rather severe. The mean annual precipitation in the valley is about 20 inches.

A large fraction of the water flowing in Riley creek is used to irrigate the benches on the Fraser river near the mouth of the stream. It is very probable the remaining flow could be utilized to advantage on these benches. The possibilities of conserving the high-water flow have never been fully investigated.

DISCHARGE MEASUREMENTS of Riley Creek above intake of irrigation ditch, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------|-------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| July 28 | H. C. Hughes..... | 1046 | 13 | 11.6 | 1.84 | 1.35 | 21.4 |
| Sept. 16 | do | 1046 | 13 | 6.9 | 1.08 | 1.25 | 7.5 |

¹ Station established.

MONTHLY DISCHARGE of Riley Creek above irrigation ditches, for 1914.

(Drainage area, 5 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet |
| August | 21 | 4 | 10.4 | 2.1 | 2.4 | 640 |
| September | 13 | 8 | 11.0 | 2.2 | 2.5 | 650 |

Accuracy "D".

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE OF Riley Creek above irrigation ditches,
for 1914.—*Con.*

| DAY. | July. | | August. | | September. | | October. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1-3 | 13 | | 13 | | 13 |
| 2 | | | | 17 | 1-3 | 13 | 1-3 | 13 |
| 3 | | | 1-35 | 21 | | 13 | | 13 |
| 4 | | | | 17 | 1-3 | 13 | 1-3 | 13 |
| 5 | | | 1-30 | 13 | | 13 | | 13 |
| 6 | | | | 13 | 1-3 | 13 | 1-3 | 13 |
| 7 | | | 1-30 | 13 | | 10 | | 13 |
| 8 | | | | 13 | 1-25 | 8 | 1-3 | 13 |
| 9 | | | 1-30 | 13 | | 8 | | 13 |
| 10 | | | | 13 | 1-25 | 8 | 1-3 | 13 |
| 11 | | | 1-30 | 13 | | 8 | | 13 |
| 12 | | | | 10 | 1-25 | 8 | 1-3 | 13 |
| 13 | | | 1-25 | 8 | | 8 | | 13 |
| 14 | | | | 8 | 1-25 | 8 | 1-3 | 13 |
| 15 | | | 1-25 | 8 | | 8 | | |
| 16 | | | | 8 | 1-25 | 8 | | |
| 17 | | | 1-25 | 8 | | 8 | | |
| 18 | | | | | 1-25 | 8 | | |
| 19 | | | 1-25 | 8 | | 10 | | |
| 20 | | | | 8 | 1-3 | 13 | | |
| 21 | | | 1-20 | 4 | | 13 | | |
| 22 | | | | 4 | 1-3 | 13 | | |
| 23 | | | 1-20 | 4 | | 13 | | |
| 24 | | | | 6 | 1-3 | 13 | | |
| 25 | | | 1-25 | 8 | | 13 | | |
| 26 | | | | 8 | 1-3 | 13 | | |
| 27 | | | 1-25 | 8 | | 13 | | |
| 28 | | | | 10 | 1-3 | 13 | | |
| 29 | 1-3 | 13 | 1-30 | 13 | | 13 | | |
| 30 | 1-3 | 13 | 1-30 | 13 | 1-3 | 13 | | |
| 31 | | | 13 | 13 | | | | |

SETON CREEK (1049).

Location.—At footbridge at provincial hatchery, about half a mile below Seton lake, and three miles from Lillooet.

Records Available.—Daily discharges from April 6 to December 31, 1914.

Drainage Area.—460 square miles (measured from provincial map of 1912, scale 12 miles to 1 inch.)

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Daily readings.

Channel.—Wide and shallow, and strewn with boulders. The current is quite swift. The measuring section is hardly an ideal one, though about the best obtainable on the stream.

Discharge Measurements.—Four discharge measurements taken in 1914 define the rating curve fairly well except for extremely low or extremely high stages.

Winter Flow.—Open water conditions all year.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should insure a reasonable degree of accuracy, except possibly at the extreme stages.

SESSIONAL PAPER No. 25e

SETON CREEK (1049).

Seton Creek has its source in Seton lake at an elevation of 800 feet, and discharges into Cayuse creek at an elevation of 750 feet. The stream itself is only about $1\frac{1}{2}$ miles in length, but the lakes which feed it have a drainage area of some 460 square miles.

Seton creek itself is in the dry belt, though some of the territory it drains is outside. The mean annual precipitation at Lillooet is probably about 15 inches, while it may be as high as 30 or even 40 at the headwaters of some of the tributaries. The general climatic conditions vary in a similar manner.

Seton creek forms part of quite an interesting system of waterways. Anderson river rises near the divide which separates it from the Birkenhead, and flows into Anderson lake, which has a number of other rather important streams tributary to it. Anderson lake discharges through Portage creek into Seton lake, which in its turn is drained by Seton creek. The two lakes at one time formed part of quite an important route into the Lillooet and Cariboo country by Harrison lake and the Lillooet river. The construction of the Yale-Cariboo wagon road caused the practical abandonment of this route years ago, but now the country is being opened up again by the construction of the Pacific Great Eastern railway. The railroad, coming up from Squamish to Pemberton, crosses the divide from the Birkenhead, runs along the shores of Anderson and Seton lakes, follows Seton and Cayuse creeks and then crosses the Fraser river below Lillooet on its way to Clinton and Fort George. During the railroad construction the lakes were used extensively for the transportation of supplies.

The country surrounding Seton and Anderson lakes is very picturesque, and should be a good place for a summer resort. There is plenty of good hunting and fishing in the vicinity in addition to the numerous attractions which the lakes themselves afford.

The Provincial Fisheries Department is operating a fish hatchery on Seton creek. The Salmon coming up from the Fraser river are taken in the creek just below Seton lake. The spawn are hatched and the fry are kept for a time in the tanks at the hatchery. The supply of fresh water required for this purpose is taken from Seton lake.

Owing to the comparatively small fall in Seton creek and the low elevation of Seton lake, there is not much opportunity for using the water for developing water-power or even for irrigation.

There is a considerable quantity of timber on the hills surrounding the two lakes. It is generally fairly easy to get the logs down to the water, and then they can be towed to the saw-mills. There is a saw-mill on each lake.

On account of the proximity of Bridge river to Seton lake, and the great difference in altitude, there is a splendid chance to develop a large amount of water-power. By driving a tunnel through the intervening ridge, water could be diverted from Bridge river and conveyed to a point on the hillside above Seton lake, whence penstocks could be laid to a power-house situated beside the lake. Such an installation could make use of the whole minimum flow of Bridge river at a head of about 2,000 feet. If storage could be obtained on Bridge river, the available flow at low water could be increased. Such a development might mean the addition of more than 500 cubic feet per second to the natural flow of Seton creek and it would be necessary to enlarge its channel in order that it might carry off this greatly increased discharge without damage to the surrounding property. The tunnel portal and the penstocks for such a plant would be located on the hillside above the Pacific Great Eastern railway, and it would be necessary to take extra precautions to prevent leaks or breaks which might wash out the track.

There are three creeks of some importance flowing into Anderson lake, and brief descriptions of them are added here. As yet no measurements have been taken on them by the engineers of this survey, partly on account of the poor transportation facilities. Next season, however, measurements will probably be made on some or all of them.

ANDERSON RIVER.

Anderson river rises in Summit lake at an elevation of 1,600 feet and discharges into the southern end of Anderson lake at an elevation of 850 feet. Cedar, Spruce and Little Blackwater creeks are tributaries of Anderson river.

The climatic conditions in the Anderson Creek valley differ considerably from those around Lillooet. The summers are milder and the winters are not quite as cold. The mean annual precipitation is considerably greater, being between 30 and 40 inches. Irrigation is practised to some extent, but is not so necessary, as in the country immediately surrounding Lillooet.

The soil in the Anderson river valley is very fertile, and much of the best land has been taken up for settlement. This development will probably be increased on account of greatly improved transportation facilities afforded by the railroad. There is a good growth of timber in many parts of the valley. The surrounding hills are rich in minerals, and many claims have been staked, though comparatively little development has been done as yet.

LITTLE BLACKWATER.

Little Blackwater creek, which is a tributary of Anderson river, rises in Little Blackwater lake. About 3 miles of swampy land separate this lake from Big Blackwater lake, which is said to be at a somewhat higher elevation. Little Blackwater creek is quite small itself, but by diverting water into it from Big Blackwater lake, it is possible that a considerable amount of water-power might be developed by a pipeline down the valley of Little Blackwater creek.

MCGILLIVRAY CREEK.

McGillivray creek rises in the hills northwest of Anderson lake, into which it discharges.

Near the mouth of the creek there is a falls about 60 feet high at which a considerable amount of water-power might be developed. A small fraction of the water is being used at present to run a saw-mill which is situated at the mouth. Water is led from the head of the falls through a 6-inch wooden stave pipe to the turbines which drive the mill.

There are gravel deposits on this stream which contain small quantities of gold, and they are being worked to a certain extent.

ROARING CREEK.

This stream empties into Anderson lake about 7 miles from its southern end. It has quite a high water fall on it at which water-power could probably be developed.

SESSIONAL PAPER No. 25e

DISCHARGE MEASUREMENTS of Seton Creek near Seton Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------|---------------------|-----------|--------|------------------|----------------|---------------|------------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 6 ... | H. J. E. Keys | 1046 | 66 | 112 | 3.23 | 1.72 | 362 ¹ |
| June 13 | Keys & Hughes | 1046 | 78 | 231 | 6.73 | 3.30 | 1,556 |
| " 19 | H. C. Hughes | 1046 | 78 | 261 | 7.50 | 3.70 | 1,967 |
| Sept. 17 | do | 1046 | 73 | 134 | 3.64 | 2.20 | 488 |

¹ Station established.

MONTHLY DISCHARGE of Seton Creek below Seton Lake, for 1914.

(Drainage area, 460 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 450 | 300 | 362 | 0.8 | 0.9 | 21,500 |
| May | 1,760 | 420 | 1,013 | 2.2 | 2.5 | 62,300 |
| June | 2,280 | 1,660 | 1,848 | 4.0 | 4.5 | 110,000 |
| July | 2,800 | 1,760 | 2,390 | 5.2 | 6.0 | 147,000 |
| August | 1,760 | 700 | 952 | 2.1 | 2.4 | 58,500 |
| September | 610 | 450 | 492 | 1.1 | 1.2 | 29,300 |
| October | 610 | 450 | 510 | 1.1 | 1.3 | 31,400 |
| November | 610 | 450 | 509 | 1.1 | 1.2 | 30,300 |
| December | 450 | 340 | 382 | 0.8 | 0.9 | 23,500 |

Accuracy "C".

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Seton Creek below Seton Lake, for 1914.

| DAY. | April. | | May. | | June. | | July. | | August. | | September. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 2-0 | 420 | 3-4 | 1,660 | 3-7 | 1,970 | 3-5 | 1,760 | 2-4 | 610 |
| 2 | | | 2-0 | 420 | 3-4 | 1,660 | 3-7 | 1,970 | 3-4 | 1,660 | 2-4 | 610 |
| 3 | | | 2-0 | 420 | 3-4 | 1,660 | 3-7 | 1,970 | 3-3 | 1,550 | 2-4 | 610 |
| 4 | | | 2-0 | 420 | 3-4 | 1,660 | 4-0 | 2,280 | 3-2 | 1,440 | 2-4 | 610 |
| 5 | 1-4 | 320 | 2-0 | 420 | 3-4 | 1,660 | 4-2 | 2,490 | 2-8 | 1,030 | 2-3 | 540 |
| 6 | 1-3 | 310 | 2-1 | 450 | 3-4 | 1,660 | 4-2 | 2,490 | 2-8 | 1,030 | 2-3 | 540 |
| 7 | 1-5 | 330 | 2-1 | 450 | 3-4 | 1,660 | 4-1 | 2,390 | 2-8 | 1,030 | 2-2 | 490 |
| 8 | 1-5 | 330 | 2-1 | 450 | 3-4 | 1,660 | 4-2 | 2,490 | 2-8 | 1,030 | 2-3 | 540 |
| 9 | 1-5 | 330 | 2-2 | 490 | 3-4 | 1,660 | 4-2 | 2,490 | 2-6 | 810 | 2-3 | 540 |
| 10 | 1-6 | 340 | 2-2 | 490 | 3-4 | 1,660 | 4-3 | 2,600 | 2-7 | 920 | 2-2 | 490 |
| 11 | 1-6 | 340 | 2-3 | 540 | 3-4 | 1,660 | 4-3 | 2,600 | 2-7 | 920 | 2-2 | 490 |
| 12 | 1-6 | 340 | 2-4 | 610 | 3-4 | 1,660 | 4-2 | 2,490 | 2-7 | 920 | 2-2 | 490 |
| 13 | 1-7 | 350 | 2-5 | 700 | 3-4 | 1,660 | 4-3 | 2,600 | 2-7 | 920 | 2-1 | 450 |
| 14 | 1-7 | 350 | 2-6 | 810 | 3-4 | 1,660 | 4-2 | 2,490 | 2-7 | 920 | 2-1 | 450 |
| 15 | 1-7 | 350 | 2-7 | 920 | 3-5 | 1,760 | 4-2 | 2,490 | 2-7 | 920 | 2-1 | 450 |
| 16 | 1-7 | 350 | 2-8 | 1,030 | 3-5 | 1,760 | 4-3 | 2,600 | 2-7 | 920 | 2-0 | 420 |
| 17 | 1-7 | 350 | 2-8 | 1,030 | 3-7 | 1,970 | 4-4 | 2,700 | 2-7 | 920 | 2-0 | 420 |
| 18 | 1-7 | 350 | 2-9 | 1,140 | 3-8 | 2,070 | 4-4 | 2,700 | 2-7 | 920 | 2-2 | 490 |
| 19 | 1-7 | 350 | 2-9 | 1,140 | 3-7 | 1,970 | 4-5 | 2,800 | 2-6 | 810 | 2-2 | 490 |
| 20 | 1-8 | 370 | 3-0 | 1,250 | 3-8 | 2,070 | 4-5 | 2,800 | 2-6 | 810 | 2-2 | 490 |
| 21 | 1-8 | 370 | 3-1 | 1,340 | 3-9 | 2,180 | 4-5 | 2,800 | 2-6 | 810 | 2-2 | 490 |
| 22 | 2-1 | 450 | 3-2 | 1,440 | 4-0 | 2,280 | 4-4 | 2,700 | 2-6 | 810 | 2-1 | 450 |
| 23 | 2-1 | 450 | 3-3 | 1,550 | 3-9 | 2,180 | 4-3 | 2,600 | 2-6 | 810 | 2-1 | 450 |
| 24 | 2-0 | 420 | 3-4 | 1,660 | 3-9 | 2,180 | 4-2 | 2,490 | 2-6 | 810 | 2-1 | 450 |
| 25 | 2-0 | 420 | 3-4 | 1,660 | 3-8 | 2,070 | 4-1 | 2,390 | 2-6 | 810 | 2-1 | 450 |
| 26 | 2-0 | 420 | 3-4 | 1,660 | 3-8 | 2,070 | 4-1 | 2,390 | 2-5 | 700 | 2-1 | 450 |
| 27 | 2-0 | 420 | 3-4 | 1,660 | 3-7 | 1,970 | 3-8 | 2,070 | 2-5 | 700 | 2-1 | 450 |
| 28 | 2-0 | 420 | 3-5 | 1,760 | 3-6 | 1,860 | 3-7 | 1,970 | 2-5 | 700 | 2-1 | 450 |
| 29 | 2-0 | 420 | 3-5 | 1,760 | 3-6 | 1,860 | 3-6 | 1,860 | 2-5 | 700 | 2-1 | 450 |
| 30 | 2-0 | 420 | 3-4 | 1,660 | 3-7 | 1,970 | 3-6 | 1,860 | 2-5 | 700 | 2-1 | 450 |
| 31 | | | 3-4 | 1,660 | | | 3-5 | 1,760 | 2-5 | 700 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Seton Creek below Seton Lake, for
1914—*Con.*

| DAY. | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2-2 | 490 | 2-2 | 490 | 2-1 | 450 |
| 2..... | 2-2 | 490 | 2-3 | 540 | 2-1 | 450 |
| 3..... | 2-2 | 490 | 2-4 | 610 | 2-1 | 450 |
| 4..... | 2-2 | 490 | 2-4 | 610 | 2-0 | 420 |
| 5..... | 2-2 | 490 | 2-4 | 610 | 2-0 | 420 |
| 6..... | 2-2 | 490 | 2-4 | 610 | 2-0 | 420 |
| 7..... | 2-2 | 490 | 2-4 | 610 | 2-0 | 420 |
| 8..... | 2-2 | 490 | 2-4 | 610 | 2-0 | 420 |
| 9..... | 2-2 | 490 | 2-4 | 610 | 2-0 | 420 |
| 10..... | 2-2 | 490 | 2-3 | 540 | 2-0 | 420 |
| 11..... | 2-2 | 490 | 2-3 | 540 | 1-9 | 390 |
| 12..... | 2-2 | 490 | 2-3 | 540 | 1-9 | 390 |
| 13..... | 2-2 | 490 | 2-3 | 540 | 1-9 | 390 |
| 14..... | 2-1 | 450 | 2-3 | 540 | 1-9 | 390 |
| 15..... | 2-1 | 450 | 2-2 | 490 | 1-8 | 370 |
| 16..... | 2-1 | 450 | 2-2 | 490 | 1-8 | 370 |
| 17..... | 2-2 | 490 | 2-1 | 450 | 1-8 | 370 |
| 18..... | 2-2 | 490 | 2-1 | 450 | 1-8 | 370 |
| 19..... | 2-2 | 490 | 2-1 | 450 | 1-8 | 370 |
| 20..... | 2-3 | 540 | 2-1 | 450 | 1-7 | 350 |
| 21..... | 2-3 | 540 | 2-1 | 450 | 1-7 | 350 |
| 22..... | 2-3 | 540 | 2-1 | 450 | 1-7 | 350 |
| 23..... | 2-4 | 610 | 2-1 | 450 | 1-7 | 350 |
| 24..... | 2-4 | 610 | 2-1 | 450 | 1-7 | 350 |
| 25..... | 2-4 | 610 | 2-1 | 450 | 1-7 | 350 |
| 26..... | 2-4 | 610 | 2-1 | 450 | 1-7 | 350 |
| 27..... | 2-3 | 540 | 2-1 | 450 | 1-6 | 340 |
| 28..... | 2-3 | 540 | 2-1 | 450 | 1-6 | 340 |
| 29..... | 2-2 | 490 | 2-1 | 450 | 1-6 | 340 |
| 30..... | 2-2 | 490 | 2-1 | 450 | 1-6 | 340 |
| 31..... | 2-2 | 490 | ..... | ..... | 1-6 | 340 |

SIX-MILE CREEK (1061).

Location.—At Highway bridge—1 mile from the mouth, 5 miles from Pemberton, and 56 miles from Squamish.

Records Available.—Daily discharges from June 2, 1914, to December 31, 1914.

Drainage Area.—Thirty square miles (measured from the provincial map of 1913, scale 3 miles to 1 inch).

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Daily readings.

Channel.—Wide and shallow and strewn with boulders and coarse gravel. The current is very swift. The measuring section is hardly an ideal one, though about the best obtainable on the stream.

Discharge Measurements.—Five discharge measurements in 1914-15 define the rating curve fairly well, except for extremely high stages.

Winter Flow.—Open water conditions all winter.

Accuracy.—Daily gauge readings combined with a fairly well-defined rating curve should insure a reasonable degree of accuracy, except possibly at extremely high stages.

SIX-MILE CREEK (1061).

Six-mile creek has its source in the mountains to the southwest of Pemberton and discharges into the Green river at an elevation of about 1,400 feet. It has a drainage area of something like 30 square miles.

The climate in the Six-mile creek watershed is much similar to that of Pemberton meadows and the Green river valley. The range of temperature is not very great. There is a fairly heavy snowfall. The mean annual precipitation of the watershed is about 75 inches.

Six-mile creek is the second largest tributary of Green river. The stream has a very rapid fall, and considerable power might be developed on it. If a suitable strap site can be found on it, it would assist in regulating the flow in Green river for use at the proposed development at Nairn falls. Its value in this capacity has never been fully investigated.

The main line of the Pacific Great Eastern railway crosses the stream about three-quarters of a mile from the mouth. A flag-station, Tisdall, near this point, affords easy access to the gauging station.

There is some good farming land on the benches near the mouth of the stream, but it is little developed as yet.

DISCHARGE MEASUREMENTS of Six-mile Creek at mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------|--------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| June 21.... | Keys & Hughes..... | 1046 | | | | | |
| Aug. 12.... | H. C. Hughes..... | 1046 | 48 | 123 | 6.8 | 3.32 | 840 |
| Sept. 9.... | do..... | 1046 | 45 | 66 | 4.43 | 2.28 | 220 |
| " 10.... | do..... | 1046 | 45 | 86.4 | 5.13 | 2.80 | 446 |
| Nov. 27.... | Dobbie & Hughes.. | 1057 | 45 | 67.8 | 5.18 | 2.40 | 346 ² |

¹ Stations established.

² Channel probably changed by freshet.

MONTHLY DISCHARGE of Six-mile Creek, 5 miles from Pemberton, for 1914.

(Drainage area, 30 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|--------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June... | 1,720 | 390 | 866 | 28.9 | 32.2 | 52,000 | C |
| July | 1,900 | 540 | 1,170 | 39.0 | 45.0 | 71,900 | C |
| August | 1,090 | 390 | 717 | 23.9 | 27.6 | 44,100 | B |
| September... | | | | | | | |
| October. | 6,580 | 40 | 1,620 | 5.4 | 6.2 | 99,600 | D |
| November | 1,850 | 100 | 590 | 2.0 | 2.2 | 35,000 | B |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE OF Six-mile Creek at Highway Bridge,
for 1914.

| DAY. | June. | | July. | | August. | | September. | | October. | | November. | | |
|------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|-----|
| | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | |
| 1 | 3.4 | 910 | 3.9 | 1,360 | 3.0 | 600 | 2.65 | 410 | 2.6 | 390 | 4.45 | 1,550 | |
| 2 | 3.4 | 910 | 4.2 | 1,630 | 3.2 | 750 | 2.6 | 390 | 2.4 | 320 | 4.25 | 1,680 | |
| 3 | 3.4 | 910 | 4.4 | 1,810 | 3.3 | 830 | 2.6 | 390 | 2.2 | 260 | 4.15 | 1,580 | |
| 4 | 3.0 | 600 | 4.3 | 1,720 | 3.4 | 910 | 2.6 | 390 | 2.1 | 230 | 3.95 | 1,400 | |
| 5 | 2.9 | 540 | 4.0 | 1,450 | 3.3 | 830 | 2.6 | 390 | 2.1 | 230 | 3.65 | 1,130 | |
| 6 | 2.7 | 440 | 3.8 | 1,270 | 3.3 | 830 | 2.6 | 390 | 1.9 | 180 | 3.35 | 870 | |
| 7 | 2.7 | 440 | 3.7 | 1,180 | 3.2 | 750 | 2.6 | 390 | 1.6 | 120 | 3.05 | 640 | |
| 8 | 2.6 | 390 | 3.5 | 1,000 | 3.2 | 750 | 2.6 | 390 | 1.1 | 40 | 3.25 | 790 | |
| 9 | 2.7 | 440 | 3.5 | 1,000 | 3.0 | 600 | 2.5 | 350 | 2.2 | 260 | 3.45 | 950 | |
| 10 | 2.8 | 490 | 3.4 | 910 | 3.0 | 600 | 2.3 | 290 | 2.7 | 440 | 3.15 | 710 | |
| 11 | 2.9 | 540 | 4.2 | 1,630 | 3.1 | 670 | 2.8 | 490 | 2.2 | 260 | 2.95 | 570 | |
| 12 | 3.1 | 670 | 4.5 | 1,900 | 3.2 | 750 | 2.8 | 490 | 2.1 | 230 | 2.75 | 460 | |
| 13 | 3.3 | 830 | 4.3 | 1,720 | 3.6 | 1,090 | 2.3 | 290 | 6.3 | 3,520 | 2.65 | 420 | |
| 14 | 3.8 | 1,270 | 4.4 | 1,810 | 3.4 | 910 | 2.3 | 290 | 6.0 | 3,250 | 2.45 | 330 | |
| 15 | 3.9 | 1,360 | 4.5 | 1,900 | 3.2 | 750 | 2.1 | 230 | 8.9 | 5,860 | 2.35 | 300 | |
| 16 | 4.2 | 1,630 | 4.3 | 1,720 | 3.2 | 750 | 2.0 | 200 | 9.7 | 6,580 | 2.35 | 300 | |
| 17 | 4.3 | 1,720 | 3.7 | 1,180 | 3.0 | 600 | | | | 6,000 | 2.15 | 240 | |
| 18 | 4.0 | 1,450 | 3.8 | 1,270 | 2.9 | 540 | | | | 4,000 | 1.95 | 190 | |
| 19 | 3.8 | 1,270 | 3.8 | 1,270 | 3.3 | 830 | | | | 4.55 | 1,950 | 2.05 | 220 |
| 20 | 3.4 | 910 | 3.5 | 1,000 | 3.5 | 1,000 | | | | 4.15 | 1,580 | 2.15 | 240 |
| 21 | 3.1 | 670 | 3.2 | 750 | 3.1 | 670 | | | | 3.75 | 1,220 | 2.25 | 280 |
| 22 | 3.0 | 600 | 3.1 | 670 | 3.5 | 1,000 | | | | 3.45 | 960 | 2.15 | 240 |
| 23 | 3.1 | 670 | 3.3 | 830 | 2.9 | 540 | | | | 3.25 | 790 | 2.35 | 300 |
| 24 | 3.0 | 600 | 3.3 | 830 | 2.9 | 540 | | | | 2.95 | 570 | 2.35 | 300 |
| 25 | 3.4 | 910 | 3.3 | 830 | 3.1 | 670 | | | | 3.15 | 710 | 3.25 | 790 |
| 26 | 3.4 | 910 | 3.3 | 830 | 3.0 | 600 | | | | 3.15 | 710 | 2.65 | 420 |
| 27 | 3.3 | 830 | 3.1 | 670 | 3.0 | 600 | | | | 3.55 | 1,040 | 1.70 | 140 |
| 28 | 3.4 | 910 | 3.0 | 690 | 3.1 | 670 | | | | 4.45 | 1,850 | 1.80 | 160 |
| 29 | 3.5 | 1,000 | 2.9 | 540 | 3.0 | 600 | | | | 5.55 | 2,850 | 1.60 | 120 |
| 30 | 3.7 | 1,180 | 3.0 | 600 | 3.0 | 600 | | | | 4.85 | 2,220 | 1.50 | 100 |
| 31 | | | 3.0 | 600 | 2.6 | 390 | | | | 4.25 | 1,680 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Six-mile Creek at Highway Bridge,
for 1914—*Con.*

| DAY. | December. | |
|------|---------------|-----------|
| | Gauge Height. | Discharge |
| | Feet. | Sec.-ft. |
| 1 | 2.05 | 220 |
| 2 | 2.00 | 200 |
| 3 | 1.95 | 190 |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | 1.45 | 90 |
| 14 | 1.30 | 60 |
| 15 | 1.30 | 60 |
| 16 | 1.35 | 70 |
| 17 | | 60 |
| 18 | 1.20 | 50 |
| 19 | 1.25 | 50 |
| 20 | | 50 |
| 21 | | 50 |
| 22 | 1.25 | 50 |
| 23 | | 50 |
| 24 | | 60 |
| 25 | 1.30 | 60 |
| 26 | | 50 |
| 27 | 1.30 | 60 |
| 28 | | 70 |
| 29 | 1.40 | 80 |
| 30 | 1.40 | 80 |
| 31 | 1.40 | 80 |

SOO RIVER (1037).

Location.—At Highway bridge, 2 miles from the mouth; 6½ miles from Pemberton, and 56 miles from Squamish.

Records Available.—Six meter measurements. Gauge readings are available from December 5, 1914. These can be used to get discharges when the curve is more thoroughly defined.

Drainage Area.—Seventy-five square miles (measured from the Provincial map of 1912, scale 3 miles to 1 inch).

Gauge.—Vertical staff on bridge pier, referenced to three bench-marks. Readings daily.

Channel.—Wide and shallow, strewn with boulders, gravel and silt. The current is fairly swift. The metering section is an excellent one.

Discharge Measurements.—Six meter measurements.

Winter Flow.—The measuring section is usually frozen over and the channel is affected by ice at times during the winter.

SOO RIVER (1037).

Soo river has its source in the mountains to the northwest of Green lake, and discharges into the Green river about 11 miles from its mouth, at an elevation of some 1,500 feet. It has a drainage area of something like 75 square miles.

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The climate in the Soo river watershed is much similar to that of Pemberton meadows and the Green river valley. The range of temperature is not very great, and there is a fairly heavy snowfall. The mean annual precipitation for the whole watershed is about 75 inches.

The discharge figures indicate that there is a considerable quantity of water flowing in Soo river. This could be used to develop power in a small canyon about 2 miles from the mouth, in which there is a large fall. The stream could also be used to good advantage as a storage reservoir for power development on Green river at Nairn falls. About 20 miles from the mouth there is a string of fair-sized lakes and several large meadows which are well adapted for this purpose. A pack trail follows the stream up to the lakes.

The main line of the Pacific Great Eastern railway follows along the right bank for about 2 miles, and crosses 4 miles from the mouth.

There is some good farming land on the flats near the mouth of the stream. The Soo river is fairly well-timbered.

DISCHARGE MEASUREMENTS of Soo River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|----------------------|-----------|--------|------------------|----------------|---------------|------------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| March 24..... | H. J. E. Keys..... | | 107 | 320 | 2.67 | 2.93 | |
| May 30..... | Keys & Hughes..... | 1046 | 115 | 426 | 4.42 | 3.87 | 853 |
| July 19..... | H. C. Hughes..... | 1046 | 110 | 366 | 3.60 | 3.50 | 1,880 |
| Aug. 13..... | do..... | 1046 | 90 | 223 | 1.61 | 1.10 | 1,320 |
| Dec. 3..... | Dobbie & Hughes..... | 1057 | | | | | 357 ² |

Station established.

² Channel probably changed by freshet.

TEXAS CREEK (1044).

Location.—At the highway bridge, 14 miles from Lillooet, and on the west side of the Fraser river.

Records Available.—Daily discharges from April 14 to September 14, 1914 (irrigation season).

Drainage Area.—Fifty square miles (measured from the provincial map of 1912, scale 12 miles to 1 inch).

Gauge.—Vertical staff gauge nailed to bridge pier, and referenced to three bench-marks. Gauge readings taken three times a week.

Channel.—Wide and shallow, covered with boulders. The measuring section on the lower side of the bridge is rather poor but is the best obtainable.

Discharge Measurements.—Four meter measurements taken during the spring and summer of 1914 define the rating curve fairly well for all but the highest stages.

Winter Flow.—Measurements made only during the irrigation season.

Accuracy.—The four meter measurements agree fairly well and cover all but the highest stages. The gauge readings were taken only three times a week.

TEXAS CREEK (1044).

Texas creek has its source in the mountains to the south of Lillooet. Some of the mountain peaks in its vicinity attain an altitude of 8,000 feet. It discharges into the Fraser river some 14 miles below Lillooet, at an elevation of about 600 feet. It has a drainage area of something like 50 square miles.

The climate in the Texas creek watershed is much similar to that of the Lillooet district generally; the summers are quite hot and the winters rather severe. At the mouth the mean annual precipitation is probably about 20 inches, and this may increase to 30 inches or more at the higher altitudes near the head-waters.

The discharge figures indicate that there is a considerable quantity of water flowing in Texas creek during the irrigation season, and in a dry part of the country like the Lillooet district, this water should be quite valuable. Unfortunately, the benches near the mouth are so high above the stream that it would be very costly to get the water up to them. There are large areas of good land on the opposite side of the Fraser river which might be irrigated from Texas creek, though the expense of conveying the water across the river would be quite high.

DISCHARGE MEASUREMENTS of Texas Creek one mile from mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-----------------|-------------------------|-----------|--------|------------------|----------------|---------------|------------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 14 . . . | H. J. E. Keys | 1046 | 19 | 29.7 | 3.60 | 1.20 | 107 ¹ |
| June 7 | Keys & Hughes | 1046 | 22 | 42.7 | 5.47 | 2.00 | 233 |
| July 29 | H. C. Hughes | 1046 | 22 | 43.0 | 2.96 | 1.50 | 137 |
| Sept. 16 . . . | do | 1046 | 20 | 26.3 | 2.39 | 1.00 | 63 |

¹ Station established, gauge referenced to bench-marks.

MONTHLY DISCHARGE of Texas Creek one mile from mouth, for 1914.

(Drainage area, 50 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| May | 340 | 120 | 247 | 4.9 | 5.6 | 15,200 |
| June | 560 | 210 | 337 | 6.7 | 7.5 | 20,000 |
| July | 280 | 140 | 211 | 4.2 | 4.8 | 13,000 |
| August | 130 | 70 | 100 | 2.0 | 2.3 | 6,100 |
| September . . | 100 | 50 | 71 | 1.4 | 1.6 | 4,200 |

Accuracy "C".

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DAILY GAUGE HEIGHT AND DISCHARGE of Texas Creek one mile from mouth,
for 1914.

| Day. | April. | | May. | | June. | | July. | | August. | | September. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1.4 | 120 | 2.6 | 360 | 2.1 | 250 | | 130 | 1.05 | 70 |
| 2 | | | 1.4 | 120 | | 390 | | 250 | 1.45 | 130 | | 70 |
| 3 | | | 1.7 | 170 | 2.8 | 410 | 2.1 | 250 | | 130 | 1.05 | 70 |
| 4 | | | 1.6 | 160 | | 390 | | 240 | 1.45 | 130 | | 70 |
| 5 | | | 1.5 | 140 | 2.6 | 360 | 2.0 | 230 | | 120 | 1.0 | 60 |
| 6 | | | 1.5 | 140 | | 320 | | 230 | 1.4 | 120 | | 60 |
| 7 | | | 1.5 | 140 | 2.2 | 280 | 2.0 | 230 | | 120 | 1.0 | 60 |
| 8 | | | 1.5 | 140 | | 250 | | 240 | 1.4 | 120 | | 60 |
| 9 | | | 1.7 | 170 | 2.0 | 230 | 2.1 | 250 | | 120 | 0.9 | 50 |
| 10 | | | 1.8 | 190 | | 240 | | 260 | 1.35 | 110 | | 50 |
| 11 | | | | 220 | 2.1 | 250 | 2.2 | 280 | | 110 | 0.9 | 50 |
| 12 | | | 2.1 | 250 | | 280 | | 260 | 1.3 | 100 | | 60 |
| 13 | | | | 260 | 2.3 | 300 | 2.1 | 250 | | 100 | 1.0 | 60 |
| 14 | | | 2.2 | 280 | | 360 | | 240 | 1.3 | 100 | | 70 |
| 15 | 1.3 | 100 | | 280 | 2.9 | 440 | 2.0 | 230 | | 100 | 1.05 | 70 |
| 16 | 1.3 | 100 | 2.2 | 280 | | 480 | | 220 | 1.25 | 100 | | 70 |
| 17 | 1.4 | 120 | | 290 | 3.2 | 510 | 1.9 | 210 | | 100 | 1.0 | 60 |
| 18 | 1.4 | 120 | 2.3 | 300 | | 540 | | 220 | 1.25 | 100 | | 60 |
| 19 | 1.4 | 120 | | 300 | 3.4 | 560 | 2.0 | 230 | | 90 | 1.0 | 60 |
| 20 | 1.4 | 120 | 2.3 | 300 | | 390 | | 220 | 1.2 | 90 | | 70 |
| 21 | 1.3 | 100 | | 310 | 1.9 | 210 | 1.9 | 210 | | 90 | 1.05 | 70 |
| 22 | 1.3 | 100 | 2.4 | 320 | | 240 | | 190 | 1.2 | 90 | | 80 |
| 23 | 1.3 | 100 | | 330 | 2.2 | 280 | 1.7 | 170 | | 90 | 1.1 | 70 |
| 24 | 1.5 | 140 | 2.5 | 340 | | 290 | | 160 | 1.15 | 80 | | 80 |
| 25 | 1.5 | 140 | | 320 | 2.2 | 280 | 1.6 | 150 | | 80 | 1.2 | 90 |
| 26 | 1.4 | 120 | 2.3 | 300 | | 290 | | 150 | 1.15 | 80 | | 90 |
| 27 | 1.4 | 120 | | 290 | 2.3 | 300 | 1.55 | 150 | | 80 | 1.25 | 100 |
| 28 | 1.4 | 120 | 2.2 | 280 | | 300 | | 140 | 1.1 | 70 | | 100 |
| 29 | 1.4 | 120 | | 290 | 2.3 | 300 | 1.5 | 140 | | 70 | 1.3 | 100 |
| 30 | 1.4 | 120 | 2.3 | 300 | | 280 | | 140 | 1.05 | 70 | | 100 |
| 31 | | | | 330 | | | 1.5 | 140 | | 70 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Texas Creek, one mile from mouth,
for 1914—*Con.*

| DAY. | October. | |
|------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1 | | 100 |
| 2 | 1-3 | 100 |
| 3 | | 100 |
| 4 | 1-25 | 100 |
| 5 | | 90 |
| 6 | 1-2 | 90 |
| 7 | | 90 |
| 8 | 1-15 | 80 |
| 9 | | 80 |
| 10 | 1-1 | 70 |
| 11 | | 70 |
| 12 | 1-05 | 70 |
| 13 | | 70 |
| 14 | 1-0 | 60 |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | 0-8 |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | |
| 25 | | |
| 26 | | |
| 27 | | |
| 28 | | |
| 29 | | |
| 30 | | |
| 31 | | |

MISCELLANEOUS METERING STATIONS.

| Date. | Stream. | Tributary to— | Locality. | Gauge Height. | Discharge. |
|--------------------|--|----------------------|-----------------------------|---------------|------------|
| | | | | Feet. | Sec.-ft. |
| SOUTHERN DISTRICT. | | | | | |
| Aug. 26. | Black..... | Howe sound..... | Above intake..... | 0-49 | 1-40 |
| May 22. | Trout—east..... | Trout lake..... | Hastings townsite..... | | 1-6 |
| | Trout—west..... | "..... | "..... | | 0-8 |
| July 14. | Skagit..... | Gulf of Georgia..... | International boundary..... | 2-68 | 1,240 |
| Aug. 12. | Windermere..... | Burrard inlet..... | Bidwell bay..... | 0-31 | 0-34 |
| " 14. | "..... | "..... | "..... | 0-31 | 0-25 |
| Sept. 24. | Capilano intake from Capilano creek..... | | | | 40-2 |
| | Overflow from intake..... | | | | 12-9 |
| | Amount entering city pipes..... | | | | 27-3 |
| VANCOUVER ISLAND. | | | | | |
| June 11. | Sooke..... | Sooke inlet..... | Two miles from mouth..... | | 57 |
| July 31. | Ash..... | Mouth..... | | 2-00 | 247 |
| Sept. 11. | "..... | "..... | | 1-68 | 141 |
| Dec. 14. | "..... | "..... | | 2-30 | 382 |

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 6

Kamloops Division—Hydrographic Data

CHAPTER VI.

KAMLOOPS DIVISION—HYDROGRAPHIC DATA.

REGULAR METERING STATION.

BOLEAN CREEK (2002).

Location.—Section 10, township 18, range 12, west 6th meridian.

Records Available.—May 23 to December 31, 1911; January 1 to September 16, 1912; April 27 to September 19, 1913; April 1 to December 8, 1914.

Drainage Area.—Eighty square miles.

Gauge.—Vertical staff gauge. Read by Clement Stickney, Falkland, B.C.

Channel.—Gravel, sandy and clean. One permanent channel. Average width about 20 feet.

Discharge Measurements.—In freset, measurements are made with a stay line and 6½ pound weight from a log. Low-water measurements are made by wading. Gauge-height discharge curve is fairly well defined from twelve meterings.

Winter Flow.—Partial ice conditions usually prevail during December and January.

Accuracy.—Fairly high, being probably within 10 per cent of obtaining conditions.

DISCHARGE MEASUREMENTS of Bolean Creek near Falkland, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 22..... | C. Corbould | 1915 | 26.0 | 26.0 | 2.4 | 1.8 | 63.0 ¹ |
| July 23..... | " | 1915 | 20.0 | 15.1 | 1.38 | 1.3 | 20.8 |
| Sept. 24..... | " | 1915 | 16.5 | 6.8 | 1.13 | 1.15 | 7.7 |

¹See meterings 1911 and 1912, Water Resources Paper No. 1.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

DAILY GAUGE HEIGHT AND DISCHARGE OF Bolean Creek near Stickney's Ranch,
for 1914.

| DAY. | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-25 | 15-6 | 2-24 | 148-4 | 2-42 | 210-8 |
| 2..... | 1-30 | 18-2 | 2-47 | 230-3 | 2-40 | 203-0 |
| 3..... | 1-30 | 18-2 | 2-67 | 311-4 | 2-42 | 210-8 |
| 4..... | 1-40 | 24-0 | 2-57 | 270-0 | 2-32 | 174-2 |
| 5..... | 1-42 | 25-3 | 2-50 | 242-0 | 2-25 | 151-5 |
| 6..... | 1-47 | 28-5 | 2-30 | 167-0 | 2-20 | 136-0 |
| 7..... | 1-57 | 35-7 | 2-30 | 167-0 | 2-15 | 122-5 |
| 8..... | 1-55 | 34-2 | 2-35 | 185-0 | 2-15 | 122-5 |
| 9..... | 1-57 | 35-7 | 2-75 | 345-0 | 2-10 | 109-0 |
| 10..... | 1-60 | 38-0 | 2-85 | 387-0 | 2-20 | 136-0 |
| 11..... | 1-60 | 38-0 | 2-80 | 366-0 | 2-30 | 167-0 |
| 12..... | 1-65 | 42-5 | 2-90 | 408-0 | 2-25 | 151-5 |
| 13..... | 1-75 | 52-0 | 2-87 | 395-4 | 2-22 | 142-2 |
| 14..... | 1-90 | 71-0 | 3-05 | 470-0 | 2-17 | 127-9 |
| 15..... | 1-97 | 82-9 | 3-02 | 457-4 | 2-10 | 109-0 |
| 16..... | 2-00 | 88-0 | 2-95 | 428-5 | 2-10 | 109-0 |
| 17..... | 1-92 | 74-4 | 2-80 | 366-0 | 2-05 | 98-5 |
| 18..... | 1-87 | 66-8 | 2-72 | 332-4 | 2-00 | 88-0 |
| 19..... | 1-85 | 64-0 | 2-66 | 307-2 | 1-90 | 71-0 |
| 20..... | 2-00 | 88-0 | 2-60 | 282-0 | 1-85 | 64-0 |
| 21..... | 1-95 | 79-5 | 2-60 | 282-0 | 1-80 | 57-0 |
| 22..... | 1-90 | 71-0 | 2-60 | 282-0 | 1-80 | 57-0 |
| 23..... | 1-85 | 64-0 | 2-67 | 311-4 | 1-82 | 59-8 |
| 24..... | 1-90 | 71-0 | 2-70 | 324-0 | 1-82 | 59-8 |
| 25..... | 1-90 | 71-0 | 2-57 | 270-0 | 1-90 | 71-0 |
| 26..... | 1-90 | 71-0 | 2-52 | 250-0 | 1-82 | 59-8 |
| 27..... | 1-95 | 79-5 | 2-42 | 210-8 | 1-72 | 49-0 |
| 28..... | 2-00 | 88-0 | 2-37 | 192-2 | 1-70 | 47-0 |
| 29..... | 2-00 | 88-0 | 2-30 | 167-0 | 1-70 | 47-0 |
| 30..... | 2-05 | 98-5 | 2-27 | 157-7 | 1-65 | 42-5 |
| 31..... | | | 2-3 | 167-0 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Bolean Creek near Stickney's Ranch for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-60 | 38-0 | 1-15 | 10-5 | 1-00 | 3-0 | 1-30 | 18-2 | 1-32 | 19-4 | 1-25 | 15-6 |
| 2 | 1-52 | 32-0 | 1-15 | 10-5 | .97 | 2-1 | 1-25 | 15-6 | 1-40 | 24-0 | 1-25 | 15-6 |
| 3 | 1-47 | 28-5 | 1-10 | 8-0 | 1-00 | 3-0 | 1-25 | 15-6 | 1-35 | 21-1 | 1-30 | 18-2 |
| 4 | 1-42 | 25-3 | 1-10 | 8-0 | .97 | 2-1 | 1-25 | 15-6 | 1-30 | 18-2 | 1-25 | 15-6 |
| 5 | 1-40 | 24-0 | 1-10 | 8-0 | 1-00 | 3-0 | 1-22 | 14-4 | 1-32 | 19-4 | 1-20 | 13-0 |
| 6 | 1-40 | 24-0 | 1-10 | 8-0 | .97 | 2-1 | 1-20 | 13-0 | 1-35 | 21-1 | 1-20 | 13-0 |
| 7 | 1-35 | 21-1 | 1-10 | 8-0 | .97 | 2-1 | 1-20 | 13-0 | 1-35 | 21-1 | 1-27 | 16-6 |
| 8 | 1-30 | 18-2 | 1-10 | 8-0 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | 1-35 | 21-1 |
| 9 | 1-30 | 18-2 | 1-10 | 8-0 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | | |
| 10 | 1-30 | 18-2 | 1-10 | 8-0 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | | |
| 11 | 1-30 | 18-2 | 1-10 | 8-0 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | | |
| 12 | 1-32 | 19-4 | 1-10 | 8-0 | 1-07 | 6-5 | 1-27 | 16-6 | 1-30 | 18-2 | | |
| 13 | 1-52 | 32-0 | 1-05 | 5-5 | 1-10 | 8-0 | 1-40 | 24-0 | 1-30 | 18-2 | | |
| 14 | 1-77 | 54-0 | 1-05 | 5-5 | 1-15 | 10-5 | 1-32 | 19-4 | 1-25 | 15-6 | | |
| 15 | 1-65 | 42-5 | 1-02 | 4-0 | 1-20 | 13-0 | 1-30 | 18-2 | 1-25 | 15-6 | | |
| 16 | 1-47 | 28-5 | 1-00 | 3-0 | 1-15 | 10-5 | 1-30 | 18-2 | 1-30 | 18-2 | | |
| 17 | 1-40 | 24-0 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | 1-25 | 15-6 | | |
| 18 | 1-37 | 22-3 | 1-00 | 3-0 | 1-25 | 15-6 | 1-30 | 18-2 | 1-25 | 15-6 | | |
| 19 | 1-35 | 21-1 | 1-00 | 3-0 | 1-25 | 15-6 | 1-30 | 18-2 | 1-30 | 18-2 | | |
| 20 | 1-35 | 21-1 | 1-00 | 3-0 | 1-22 | 14-4 | 1-30 | 18-2 | 1-30 | 18-2 | | |
| 21 | 1-40 | 24-0 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | 1-30 | 18-2 | | |
| 22 | 1-30 | 18-2 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | 1-27 | 16-6 | | |
| 23 | 1-30 | 18-2 | 1-00 | 3-0 | 1-20 | 13-0 | 1-30 | 18-2 | 1-25 | 15-6 | | |
| 24 | 1-30 | 18-2 | 1-00 | 3-0 | 1-15 | 10-5 | 1-24 | 15-0 | 1-27 | 16-6 | | |
| 25 | 1-30 | 18-2 | 1-00 | 3-0 | 1-15 | 10-5 | 1-25 | 15-6 | 1-30 | 18-2 | | |
| 26 | 1-25 | 15-6 | 1-00 | 3-0 | 1-20 | 13-0 | 1-25 | 15-6 | 1-30 | 18-2 | | |
| 27 | 1-25 | 15-6 | 1-00 | 3-0 | 1-70 | 47-0 | 1-25 | 15-6 | 1-30 | 18-2 | | |
| 28 | 1-20 | 13-0 | 1-00 | 3-0 | 1-45 | 27-2 | 1-25 | 15-6 | 1-30 | 18-2 | | |
| 29 | 1-20 | 13-0 | 1-00 | 3-0 | 1-35 | 21-1 | 1-20 | 13-0 | 1-30 | 18-2 | | |
| 30 | 1-20 | 13-0 | 1-00 | 3-0 | 1-30 | 18-2 | 1-20 | 13-0 | 1-25 | 15-6 | | |
| 31 | 1-20 | 13-0 | 1-00 | 3-0 | | | 1-20 | 13-0 | | | | |

MONTHLY DISCHARGE of Bolean Creek near Stickney's Ranch, for 1914.

(Drainage area, 80 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|-----------------|----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area | Total in acre-feet |
| April | 98-5 | 15-6 | 57-4 | 0-7 | 0-8 | 3-415 |
| May | 470-0 | 148-4 | 286-4 | 3-6 | 4-1 | 17-610 |
| June | 210-8 | 42-5 | 108-5 | 1-3 | 1-4 | 6-430 |
| July | 54-0 | 13-0 | 22-9 | 0-3 | 0-3 | 1-408 |
| August | 10-5 | 3-0 | 5-3 | 0-6 | 0-06 | .26 |
| September | 47-0 | 2-1 | 10-8 | 0-13 | 0-14 | 644 |
| October | 24-0 | 13-0 | 16-0 | 0-2 | 0-2 | 984 |
| November | 24-0 | 15-6 | 18-1 | 0-23 | 0-26 | 1-077 |
| December | | | | | | |
| The period | 470-0 | 2-1 | 65-7 | 0-81 | 7-26 | 31-919 |

NOTE—Winter conditions obtained after December 8.

CAMPBELL CREEK (2004).

Location.—Section 26, township 19, range 16, west 6th meridian.

Records Available.—May 27 to October 4, 1911; April 1 to September 16, 1912; May 1 to August 31, 1913; April 1 to August 31, 1914.

Drainage Area.—Two hundred square miles.

Gauge.—Vertical staff gauge read by A. Holt of Barnhart Vale.

Channel.—Straight for about 100 feet at measuring section. Bed of stream sandy and fairly permanent. Average width of channel about 10 feet.

Discharge Measurements.—Gauge height discharge curve is very well defined from seven meterings taken during 1914. Measurements in high water taken from bridge with 6-pound weight. In low water, measurements taken by wading. Flow in this stream ceased altogether on August 23.

Winter Flow.—Ice conditions prevail during December, January, and February.

Accuracy.—High; results compiled from a well-rated curve.

DISCHARGE MEASUREMENTS of Campbell Creek at Todd's Corners, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-----------------------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 17..... | E. M. Dann..... | 1505 | 9 | 6.7 | 0.83 | 0.88 | 5.5 ¹ |
| May 5..... | E. M. Dann & E. H. Tredcroft..... | 1055 | 9 | 17.0 | 1.75 | 1.6 | 29.7 |
| May 15..... | do do..... | 1055 | 20 | 33.9 | 2.13 | 2.6 | 72.0 |
| June 20..... | C. B. Corbould..... | 1915 | 9 | 10.0 | 1.1 | 1.05 | 11.0 |
| June 25..... | do..... | 1915 | 7 | 8.4 | 1.7 | 1.5 | 14.0 |
| July 16..... | do..... | 1915 | 11 | 12.1 | 1.56 | 1.25 | 19.0 ² |
| July 21..... | do..... | 1915 | 11 | 10.7 | 1.29 | 1.15 | 13.8 |
| Sept. 26..... | do..... | 1915 | 5 | 1.1 | 0.7 | 0.55 | 0.8 |

Meterings not all made at same sections.

¹Dam at Campbell Lake closed.

²The only ranchers diverting water above station on this date were Messrs Pratt & Blackwell. The former using about 0.7 sec.-ft. and the latter about 1.2 sec.-ft.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell Creek at Todd's Corners,
for 1914.

| Day. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-20 | 15-5 | 1-12 | 13-1 | 1-75 | 35-5 |
| 2 | 1-20 | 15-5 | 1-17 | 14-6 | 1-67 | 32-4 |
| 3 | 1-20 | 15-5 | 1-25 | 17-2 | 1-62 | 30-5 |
| 4 | 1-20 | 15-5 | 1-31 | 19-2 | 1-51 | 26-4 |
| 5 | 1-21 | 15-8 | 1-52 | 26-8 | 1-45 | 24-2 |
| 6 | 1-15 | 14-0 | 1-83 | 38-7 | 1-45 | 24-2 |
| 7 | 1-11 | 12-8 | 1-87 | 40-3 | 1-45 | 24-2 |
| 8 | 1-10 | 12-5 | 1-92 | 42-3 | 1-42 | 23-1 |
| 9 | 1-01 | 10-1 | 1-97 | 44-4 | 1-40 | 22-4 |
| 10 | 1-01 | 10-1 | 2-00 | 45-7 | 1-40 | 22-4 |
| 11 | 1-01 | 10-1 | 2-10 | 50-0 | 1-35 | 20-6 |
| 12 | 1-00 | 9-8 | 2-25 | 56-6 | 1-30 | 18-9 |
| 13 | 0-99 | 9-3 | 2-45 | 65-5 | 1-30 | 18-9 |
| 14 | 0-96 | 8-7 | 2-60 | 72-2 | 1-27 | 17-9 |
| 15 | 0-95 | 8-4 | 2-60 | 72-2 | 1-20 | 15-5 |
| 16 | 0-91 | 7-5 | 2-60 | 72-2 | 1-20 | 15-5 |
| 17 | 0-90 | 7-3 | 2-60 | 72-2 | 1-25 | 17-2 |
| 18 | 0-86 | 6-4 | 2-55 | 70-0 | 1-25 | 17-2 |
| 19 | 0-85 | 6-2 | 2-50 | 67-7 | 1-15 | 14-0 |
| 20 | 0-95 | 8-4 | 2-40 | 63-3 | 1-06 | 11-4 |
| 21 | 1-00 | 9-8 | 2-32 | 59-7 | 1-03 | 10-6 |
| 22 | 1-00 | 9-8 | 2-28 | 57-9 | 1-05 | 11-1 |
| 23 | 0-95 | 8-4 | 2-22 | 55-3 | 1-02 | 10-3 |
| 24 | 0-90 | 7-3 | 2-18 | 53-6 | 1-02 | 10-3 |
| 25 | 1-00 | 9-8 | 2-02 | 46-5 | 1-00 | 9-8 |
| 26 | 1-05 | 11-1 | 2-00 | 45-7 | 0-97 | 8-9 |
| 27 | 1-05 | 11-1 | 1-95 | 43-6 | 0-95 | 8-4 |
| 28 | 1-05 | 11-1 | 1-91 | 41-9 | 0-97 | 8-9 |
| 29 | 1-05 | 11-1 | 1-90 | 41-5 | 0-92 | 7-8 |
| 30 | 1-10 | 12-5 | 1-86 | 39-9 | 0-92 | 7-8 |
| 31 | | | 1-81 | 37-9 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Campbell Creek near Todd's Corners,
for 1914—*Con.*

| DAY. | July. | | August. | |
|------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-90 | 7-3 | 0-70 | 3-2 |
| 2 | 0-90 | 7-3 | 0-70 | 3-2 |
| 3 | 0-90 | 7-3 | 0-66 | 2-6 |
| 4 | 0-82 | 5-5 | 0-72 | 3-6 |
| 5 | 0-87 | 6-6 | 0-72 | 3-6 |
| 6 | 0-87 | 6-6 | 0-70 | 3-2 |
| 7 | 0-85 | 6-2 | 0-70 | 3-2 |
| 8 | 0-77 | 4-5 | 0-66 | 2-6 |
| 9 | 0-67 | 2-7 | 0-65 | 2-4 |
| 10 | 0-77 | 4-5 | 0-65 | 2-4 |
| 11 | 0-82 | 5-5 | 0-65 | 2-4 |
| 12 | 0-90 | 7-3 | 0-65 | 2-4 |
| 13 | 0-95 | 8-4 | 0-65 | 2-4 |
| 14 | 1-00 | 9-8 | 0-65 | 2-4 |
| 15 | 1-30 | 18-9 | 0-65 | 2-4 |
| 16 | 1-25 | 17-2 | 0-65 | 2-4 |
| 17 | 1-20 | 15-5 | 0-62 | 1-9 |
| 18 | 1-15 | 14-0 | 0-60 | 1-6 |
| 19 | 1-12 | 13-1 | 0-60 | 1-6 |
| 20 | 1-02 | 10-3 | 0-60 | 1-6 |
| 21 | 1-02 | 10-3 | 0-60 | 1-6 |
| 22 | 1-02 | 10-3 | 0-60 | 1-6 |
| 23 | 1-02 | 10-3 | | |
| 24 | 0-87 | 6-6 | | |
| 25 | 0-75 | 4-2 | | |
| 26 | 0-75 | 4-2 | | |
| 27 | 0-75 | 4-2 | | |
| 28 | 0-80 | 5-1 | | |
| 29 | 0-80 | 5-1 | | |
| 30 | 0-71 | 3-4 | | |
| 31 | 0-70 | 3-2 | | |

MONTHLY DISCHARGE of Campbell Creek near Todd's Corners, for 1914.

(Drainage area, 200 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 15-8 | 6-2 | 10-7 | 0-05 | 0-06 | 637-0 |
| May | 72-2 | 13-1 | 48-0 | 0-24 | 0-28 | 2,951-0 |
| June | 35-5 | 7-8 | 17-5 | 0-09 | 0-10 | 1,041-0 |
| July | 18-9 | 2-7 | 8-0 | 0-04 | 0-05 | 492-0 |
| August | 3-6 | 0-0 | 1-7 | 0-01 | 0-01 | 104-5 |
| The period | 72-2 | 0-0 | 17-2 | 0-09 | 0-50 | 5,225-0 |

NOTE.—No water coming down the creek at the station after August 22.

Precipitation is low (probably 12 inches per annum), and evaporation from lake surfaces near headwaters large.

SESSIONAL PAPER No. 25e

CANYON CREEK (2057).

Location.—Section 32, township 21, range 15, west 6th meridian.

Records Available.—June 7 to August 28, 1914.

Drainage Area.—Seven square miles.

Gauge.—Standard staff gauge read daily by D. A. McKenzie.

Channel.—Channel straight at measuring section, banks very heavily timbered, velocity fairly swift, bed of stream rocky with several channels at high water.

Discharge Measurements.—Four discharge measurements were obtained during 1914 at various stages. Stream generally runs dry during end of August, and remains so until following spring.

Winter Flow.—Ice conditions always exist on this stream throughout the winter.

Accuracy.—The accuracy of returns will eventually be high but more data are required before the stream can be properly rated.

DISCHARGE MEASUREMENTS of Canyon Creek above Hefley Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 2..... | C. B. Corbould..... | 1,915 | 5 | 2.7 | 1.44 | ..... | 3.9 |
| June 7..... | do | 1,915 | 5 | 5.45 | 0.72 | 1.8 | 3.9 |
| June 30..... | do | 1,915 | 4.5 | 3.5 | 0.33 | 1.45 | 1.17 |
| Aug. 13..... | do ..... | ..... | ..... | ..... | ..... | 0.15 | 0.0 ¹ |

¹Water standing in pools.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Canyon Creek above Hefley Lake,
for 1914.

| DAY. | June. | |
|------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | 1-80 | 3-9 |
| 8 | 1-80 | 3-9 |
| 9 | 1-80 | 3-9 |
| 10 | 1-80 | 3-9 |
| 11 | 1-76 | 3-5 |
| 12 | | |
| 13 | 1-72 | 3-1 |
| 14 | 1-70 | 2-8 |
| 15 | | |
| 16 | 1-60 | 2-0 |
| 17 | | |
| 18 | | |
| 19 | 1-50 | 1-4 |
| 20 | | |
| 21 | | |
| 22 | 1-40 | 1-1 |
| 23 | | |
| 24 | 1-45 | 1-3 |
| 25 | | |
| 26 | 1-55 | 1-7 |
| 27 | | |
| 28 | | |
| 29 | 1-50 | 1-4 |
| 30 | 1-45 | 1-3 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Canyon Creek above Heffley Lake,
for 1914—*Con.*

| DAY. | July. | | August. | |
|------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0.45 | 0.1 |
| 2 | | | | |
| 3 | 1.35 | 0.9 | | |
| 4 | | | 0.40 | 0.1 |
| 5 | | | | |
| 6 | | | 0.35 | 0.1 |
| 7 | 1.20 | 0.7 | | |
| 8 | | | | |
| 9 | 1.10 | 0.6 | | |
| 10 | | | 0.25 | 0.05 |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | 0.95 | 0.4 | 0.1 | 0.0 |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | 0.75 | 0.3 | | 0.0 |
| 20 | | | | |
| 21 | 0.70 | 0.3 | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | 0.60 | 0.2 | | |
| 26 | | | | 0.0 |
| 27 | | | | |
| 28 | 0.50 | 0.2 | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |

MONTHLY DISCHARGE of Canyon Creek above Heffley Lake, for 1914.

(Drainage area, 7 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|--------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June | 3.9 | 1.1 | 2.6 | 0.4 | 0.4 | 155 |
| July | 0.9 | 0.2 | 0.4 | 0.06 | 0.07 | 24.6 |
| August | 0.1 | 0.0 | 0.05 | 0.01 | 0.01 | 3.0 |

NOTE.—Station was established on June 7. Creek stopped running on August 10. No precipitation records available

CLEARWATER RIVER (2047).

Location.—Near Raft River; Water District No. 2.

Records Available.—August 12 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—2,400 square miles.

Gauge.—Standard chain gauge graduated in feet and tenths, and read by Theo. Brookfield, rancher.

Measuring Section.—500 feet above gauge; width of channel 230 feet. Bed of stream rocky and permanent. Deepest point in measuring section at highest recorded water level 22 feet. Highest mean velocity 7.78 feet per second.

Methods of Gauging.—Discharge measurements are made from car suspended from $\frac{3}{4}$ inch steel cable.

Channel.—The channel varies in width throughout its course from 100 to 400 feet, and passes over several small falls and rapids.

Winter Flow.—The Clearwater river is seldom frozen during winter to the extent of materially affecting the accuracy of returns.

Accuracy.—The accuracy on the whole will be high, the curve being well rated, and the only possibility of error being in the present chain gauge which it is proposed to replace early in the spring of 1915.



Confluence of Myrtle and Clearwater rivers.

Photograph by F. R. Arehibald

The Myrtle river is in the foreground flowing north-westerly. The Clearwater, flowing south swings to the south-west at its junction with the Myrtle. Both rivers have storage facilities for power purposes.

SESSIONAL PAPER No. 25e

CLEARWATER RIVER.

Twenty-four miles above its confluence with the North Thompson the two principal component tributaries of the Clearwater river join. The more westerly stream of the two, geographers have named the Clearwater, while the other, which is probably the more important, is known as the Myrtle.

The Clearwater river above its junction with the Myrtle.—The Clearwater river rises in the steep hills and glaciers surrounding Upper Clearwater lake, a sheet of water with a superficial area of some 15 square miles, distant about $5\frac{1}{2}$ miles by trail from the head of Quesnel lake. Mr. F. C. Green, B.C.L.S., places the elevation of Upper Clearwater lake at 405 feet above Quesnel lake, whose altitude the Geological Survey gives as 2,250 feet above sea-level. Clearwater river, discharging from its south end is said to fall 600 feet in a distance of 7 miles in its tumultuous course to Lower Clearwater lake. (This amount is thought to be overestimated since it makes the elevation of Lower Clearwater lake coincide with the elevation of the confluence of the Myrtle and Clearwater as determined by Mr. R. H. Lee, B.C.L.S.) Two tributaries join from the east in this distance Goat creek about a mile and a half south of the Upper lake, and the outlet of Blue lake about 4 miles farther down. Blue lake lies but a quarter of a mile east, and is represented as being a beautiful rockbound sportsman's paradise, with rainbow trout and cariboo in abundance. It is said to be about 15 miles long and 1 mile wide. Navigation by canoe is possible between Blue lake and Lower Clearwater lake, which is about 17 miles long and a mile wide. The Clearwater river, draining from its south end joins the Myrtle about 13 miles below at an elevation of about 2,000 feet above the sea. Little information could be obtained regarding the course of the Clearwater between Lower Clearwater lake and the Myrtle river.

The Myrtle river.—(see description Myrtle river.)

The Clearwater river below its junction with the Myrtle.—In the twenty-four miles of its course to the North Thompson, the Clearwater river drops about 675 feet at a rate of about 31 feet to the mile. It passes through a series of rocky canyons in its course, but so far as is known there is no large natural concentrated fall. The width of the river in this part is from 200 to 500 feet.

The principal tributaries are:—

FROM THE WEST.

Mahood river (or Bridge creek).—This stream drains Canim and Mahood lakes and enters about 4 miles below the Myrtle. It is said to be a small stream "about the size of the Little Clearwater." Its drainage area is very large, though the probable low precipitation, and evaporation losses from the two large regulating lakes are contributing causes to a low run-off.

FROM THE EAST.

Little Clearwater river joins the Clearwater about 15 miles above its confluence with the Thompson. (See hydrographic data, Little Clearwater river.)

Beaver creek.—A small mountain torrent, 40 to 50 feet wide and a reported fall of 750 feet in three quarters of a mile. (June 10, 1914, 190 second-feet high water.) Joins Clearwater about 14 miles above North Thompson.

Bear creek, which joins the Clearwater about 8 miles from its mouth, is said to fall 800 feet in its last mile. (On June 11, 1914, its flow was 162 second-feet and on September 4, 1914, it was 7.4 second-feet.

Candle creek, joining about 4 miles from the river's mouth had a flow of 49.7 second-feet on June 11, and on 0.3 second-feet on August 29, 1914.

The station on the Clearwater was established by Mr. K. G. Chisholm in March, 1914, and cable station installed from which numerous meterings covering the range of stream-flow have been obtained. (See report British Columbian Minister of Lands for 1913 and, in particular articles on the Clearwater valley by Messrs. Green and Lee, British Columbia Land Surveyors.)

DISCHARGE MEASUREMENTS of Clearwater River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-------------------------------------|-----------|--------|------------------|----------------|---------------|---------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 16..... | K. G. Chisholm..... | 1055 | 200 | 2, 043 | 2-04 | 0-57 | 4,170 |
| May 30..... | E. Tredcroft..... | 1923 | 234.5 | 2, 778 | 5-84 | 4-8 | 16,227 ¹ |
| " 31..... | "..... | 1923 | 234 | 2, 735 | 5-75 | 4-6 | 15,739 ¹ |
| June 1..... | "..... | 1923 | 234 | 2, 667 | 5-56 | 4-1 | 14,854 ¹ |
| " 12..... | "..... | 1923 | 236 | 2, 890 | 6-8 | 5-3 | 19,650 ¹ |
| " 15..... | "..... | 1923 | 238 | 3, 049 | 7-63 | 6-0 | 23,292 ¹ |
| " 16..... | "..... | 1923 | 239 | 3, 174 | 7-93 | 6-5 | 25,165 ¹ |
| " 17..... | "..... | 1923 | 240 | 3, 300 | 7-78 | 7-0 | 25,703 ¹ |
| " 25..... | "..... | 1923 | 234 | 2, 599 | 5-66 | 4-2 | 14,717 ¹ |
| Sept. 19..... | E. M. Dann and E. H. Tredcroft..... | 1923 | 201.5 | 2, 022 | 2-61 | 1-29 | 5,283 |

¹Surface velocity; coefficient 0.89.

DAILY GAUGE HEIGHT AND DISCHARGE of Clearwater River near mouth, for 1914.

(Drainage area, 2,400 square miles.)

| Day. | April. | | May. | | June. | |
|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-50 | 5,650 | 1-70 | 6,100 | 4-10 | 14,475 |
| 2..... | 1-50 | 5,650 | 1-90 | 6,600 | 4-70 | 17,000 |
| 3..... | 1-40 | 5,450 | 2-60 | 8,700 | 5-40 | 19,975 |
| 4..... | 1-40 | 5,450 | 2-60 | 8,700 | 6-05 | 22,825 |
| 5..... | 1-40 | 5,450 | 2-70 | 9,050 | 6-20 | 23,500 |
| 6..... | 1-30 | 5,275 | 2-70 | 9,050 | 5-90 | 22,150 |
| 7..... | 1-20 | 5,100 | 2-70 | 9,050 | 5-75 | 21,475 |
| 8..... | 1-10 | 4,950 | 2-70 | 9,050 | 5-50 | 20,400 |
| 9..... | 1-00 | 4,800 | 2-90 | 9,775 | 5-30 | 19,550 |
| 10..... | 0-70 | 4,360 | 3-10 | 10,525 | 5-30 | 19,550 |
| 11..... | 0-60 | 4,230 | 3-40 | 11,675 | 5-30 | 19,550 |
| 12..... | 0-50 | 4,110 | 3-60 | 12,475 | 5-30 | 19,550 |
| 13..... | 0-20 | 3,750 | 3-90 | 13,675 | 5-30 | 19,550 |
| 14..... | 0-00 | 3,560 | 4-20 | 14,875 | 5-50 | 20,400 |
| 15..... | 0-40 | 3,960 | 5-30 | 19,550 | 6-00 | 22,600 |
| 16..... | 0-60 | 4,230 | 5-66 | 20,825 | 6-60 | 25,250 |
| 17..... | 0-70 | 4,360 | 5-50 | 20,400 | 7-10 | 27,500 |
| 18..... | 0-80 | 4,490 | 5-50 | 20,400 | 7-20 | 27,950 |
| 19..... | 0-90 | 4,640 | 5-40 | 19,975 | 7-05 | 27,275 |
| 20..... | 1-00 | 4,800 | 5-30 | 19,550 | 6-80 | 26,150 |
| 21..... | 1-00 | 4,800 | 5-30 | 19,550 | 6-60 | 25,250 |
| 22..... | 1-10 | 4,950 | 5-40 | 19,975 | 6-30 | 23,950 |
| 23..... | 1-10 | 4,950 | 5-50 | 20,400 | 6-00 | 22,600 |
| 24..... | 1-10 | 4,950 | 5-90 | 22,150 | 5-60 | 20,825 |
| 25..... | 1-20 | 5,100 | 6-00 | 22,600 | 5-30 | 19,550 |
| 26..... | 1-20 | 5,100 | 5-90 | 22,150 | 5-20 | 19,125 |
| 27..... | 1-20 | 5,100 | 5-65 | 21,037 | 5-20 | 19,125 |
| 28..... | 1-30 | 5,275 | 5-35 | 19,762 | 5-30 | 19,550 |
| 29..... | 1-40 | 5,450 | 5-10 | 18,700 | 5-40 | 19,975 |
| 30..... | 1-50 | 5,650 | 4-80 | 17,425 | 5-50 | 20,400 |
| 31..... | ..... | ..... | 4-60 | 16,575 | ..... | ..... |
| Total..... | ..... | 145,650 | ..... | 480,324 | ..... | 647,025 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Clearwater River near mouth, for 1914
—Con.

(Drainage area, 2,400 square miles.)

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|--------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 5-60 | 20,825 | 3-80 | 13,225 | 2-05 | 7,012 | 3-00 | 10,150 | 1-10 | 4,950 | 0-00 | 3,590 |
| 2. | 5-90 | 22,150 | 3-70 | 12,875 | 2-05 | 7,012 | 3-00 | 10,150 | 1-20 | 5,100 | -0-10 | 3,490 |
| 3. | 6-00 | 22,600 | 3-70 | 12,875 | 1-95 | 6,737 | 2-80 | 9,400 | 1-30 | 5,275 | -0-10 | 3,490 |
| 4. | 6-00 | 22,600 | 3-60 | 12,475 | 1-85 | 6,475 | 2-60 | 8,700 | 1-20 | 5,100 | -0-10 | 3,490 |
| 5. | 6-10 | 23,050 | 3-60 | 12,475 | 1-75 | 6,225 | 2-30 | 7,725 | 1-10 | 4,950 | -0-10 | 3,490 |
| 6. | 6-10 | 23,050 | 3-50 | 12,075 | 1-75 | 6,225 | 2-10 | 7,150 | 1-00 | 4,800 | -0-20 | 3,400 |
| 7. | 5-90 | 22,150 | 3-50 | 12,075 | 1-75 | 6,225 | 1-90 | 6,800 | 0-90 | 4,640 | -0-20 | 3,400 |
| 8. | 5-70 | 21,250 | 3-50 | 12,075 | 1-75 | 6,225 | 1-70 | 6,100 | 0-90 | 4,640 | -0-30 | 3,300 |
| 9. | 5-40 | 19,975 | 3-40 | 11,675 | 1-85 | 6,475 | 1-60 | 5,850 | 0-80 | 4,490 | -0-40 | 3,200 |
| 10. | 5-30 | 19,550 | 3-10 | 10,525 | 1-85 | 6,475 | 1-50 | 5,650 | 0-80 | 4,490 | -0-50 | 3,110 |
| 11. | 5-30 | 19,550 | 3-00 | 10,150 | 1-95 | 6,737 | 1-40 | 5,450 | 0-70 | 4,360 | -0-60 | 3,020 |
| 12. | 5-30 | 19,550 | 2-80 | 9,400 | 1-75 | 6,225 | 1-30 | 5,275 | 0-70 | 4,360 | -0-60 | 3,020 |
| 13. | 5-50 | 20,400 | 2-60 | 8,700 | 1-55 | 5,750 | 1-20 | 5,100 | 0-60 | 4,230 | -0-60 | 3,020 |
| 14. | 5-70 | 21,250 | 2-50 | 8,350 | 1-35 | 5,362 | 1-10 | 4,950 | 0-50 | 4,110 | -0-60 | 3,020 |
| 15. | 6-00 | 22,600 | 2-50 | 8,350 | 1-15 | 5,025 | 1-00 | 4,800 | 0-40 | 3,990 | -0-70 | 2,920 |
| 16. | 6-00 | 22,600 | 2-50 | 8,350 | 1-05 | 4,875 | 0-90 | 4,640 | 0-30 | 3,870 | -0-70 | 2,920 |
| 17. | 5-70 | 21,250 | 2-30 | 8,350 | 1-05 | 4,875 | 1-00 | 4,800 | 0-30 | 3,870 | -0-70 | 2,920 |
| 18. | 5-30 | 19,550 | 2-30 | 7,725 | 1-10 | 4,950 | 1-20 | 5,100 | 0-20 | 3,750 | -0-70 | 2,920 |
| 19. | 5-10 | 18,700 | 2-45 | 8,187 | 1-40 | 5,540 | 1-40 | 5,450 | 0-20 | 3,750 | -0-70 | 2,920 |
| 20. | 4-90 | 17,850 | 2-45 | 8,187 | 1-60 | 5,850 | 1-50 | 5,650 | 0-10 | 3,640 | -0-70 | 2,920 |
| 21. | 4-80 | 17,425 | 2-35 | 7,875 | 1-70 | 6,100 | 1-50 | 5,650 | 0-10 | 3,640 | -0-70 | 2,920 |
| 22. | 4-60 | 16,575 | 2-35 | 7,875 | 1-70 | 6,100 | 1-40 | 5,450 | 0-10 | 3,640 | -0-60 | 3,020 |
| 23. | 4-60 | 16,575 | 2-25 | 7,575 | 1-70 | 6,100 | 1-30 | 5,275 | 0-10 | 3,640 | -0-60 | 3,020 |
| 24. | 4-60 | 16,575 | 2-25 | 7,575 | 1-80 | 6,350 | 1-30 | 5,275 | 0-10 | 3,640 | -0-70 | 2,920 |
| 25. | 4-50 | 16,150 | 2-15 | 7,287 | 1-80 | 6,350 | 1-20 | 5,100 | 0-10 | 3,640 | -0-70 | 2,920 |
| 26. | 4-30 | 16,150 | 2-05 | 7,012 | 2-00 | 6,875 | 1-20 | 5,100 | 0-00 | 3,590 | -0-80 | 2,820 |
| 27. | 4-40 | 15,725 | 2-05 | 7,012 | 2-20 | 7,425 | 1-10 | 4,950 | 0-00 | 3,590 | -0-80 | 2,820 |
| 28. | 4-20 | 14,875 | 2-15 | 7,287 | 2-40 | 8,025 | 1-00 | 4,800 | 0-00 | 3,590 | -0-80 | 2,720 |
| 29. | 4-10 | 14,475 | 2-15 | 7,287 | 2-80 | 9,400 | 0-90 | 4,640 | 0-10 | 3,640 | -0-90 | 2,720 |
| 30. | 4-00 | 14,075 | 2-15 | 7,287 | 3-00 | 10,150 | 0-90 | 4,640 | 0-10 | 3,640 | -0-90 | 2,720 |
| 31. | 3-90 | 13,675 | 2-05 | 7,012 | ..... | ..... | 0-90 | 4,640 | ..... | ..... | -0-90 | 2,720 |
| Total. | ..... | 592,775 | ..... | 289,183 | ..... | 193,060 | ..... | 184,210 | ..... | 124,615 | ..... | 94,880 |

MONTHLY DISCHARGE of Clearwater River near mouth, for 1914.

(Drainage area, 2,400 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April. | 5,650 | 3,590 | 4,855 | 2.0 | 2.3 | 288,895 |
| May | 22,600 | 6,100 | 15,494 | 6.5 | 7.5 | 953,000 |
| June | 27,950 | 14,475 | 21,567 | 9.0 | 10.0 | 1,283,320 |
| July | 23,050 | 13,675 | 19,122 | 8.0 | 9.2 | 1,175,764 |
| August | 13,225 | 7,012 | 9,328 | 3.9 | 4.5 | 568,026 |
| September | 10,150 | 4,875 | 6,435 | 2.7 | 3.0 | 382,900 |
| October | 10,150 | 4,649 | 5,942 | 2.5 | 2.9 | 361,362 |
| November | 5,275 | 3,590 | 4,154 | 1.7 | 1.9 | 247,186 |
| December | 3,590 | 2,720 | 3,061 | 1.3 | 1.5 | 188,212 |
| The period. | 27,950 | 2,720 | 9,995 | 4.1 | 42.8 | 5,452,659 |

NOTE.—There are no available precipitation records of the Clearwater catchment basin. Maps are unreliable, and it would appear from the run-off figures shown that the drainage area given is not as large as the actual drainage area of the river. Since it was taken off the most reliable map available, however, it has been thought best not to alter it merely on the evidence of run-off figures for a period of one year.

LITTLE CLEARWATER CREEK (2056).

Location.—Near Raft River, Water District No. 2.

Records Available.—June 17 to December 31, 1914.

Drainage Area.—One hundred square miles.

Gauge.—Standard vertical staff gauge set near footbridge at crossing of Myrtle River trail, and read by P. McDougal, rancher.

Channel.—Average width 40 feet. The velocities are low even at high water, seldom exceeding 2.0 feet per second. Maximum flow recorded during 1914, 272 second-feet. Bed of stream at measuring section composed of mud and silt.

Winter Flow.—Partial ice conditions exist during latter end of January and beginning of February.

Accuracy.—The accuracy of returns will eventually be high, but owing to the lateness of the season when the station was established, and the difficult means of access to this stream, especially during the winter months, only two discharge measurements were obtained during 1914.

LITTLE CLEARWATER RIVER.

The Little Clearwater is tributary to the Clearwater river at a point about 15 miles north of the latter's junction with the North Thompson. It rises in the Raft River range of mountains and flows in a southwesterly direction. It is probably about 12 miles in length, its average width about 50 feet, and its depth during ordinary stages about 3 or 4 feet. Its flow at the gauging station on McDougall's ranch (lot 3188), is somewhat sluggish, but in the lowest 4 miles of its course it falls at the rate of about 50 feet to the mile. High water occurs in June, and during January and February and sometimes part of December and March the stream is frozen over. A station was established by Mr. E. H. Tredcroft on June 6, 1915, on lot 3188, which is about 7 miles from the Clearwater junction.

SESSIONAL PAPER No. 25e

DISCHARGE MEASUREMENTS of Little Clearwater River near Green Mountain,
for 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section | Mean Velocity. | Gauge Height. | Discharge. |
|----------------------|---|-----------|-------|-----------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. June 6..... | E. H. Tredcroft..... | 1923 | 41 | 147 | 1.8 | 2.5 | 272 |
| Sept. 3..... | E. H. Tredcroft and C. B. Corbould..... | 1923 | 37 | 68 | 0.2 | 0.6 | 13.7 |

An effort will be made to completely rate this station during 1915.

DAILY GAUGE HEIGHT AND DISCHARGE of Little Clearwater River near Green Mountain for 1914.

| DAY. | June. | |
|---------|--------------|-----------|
| | Gauge Height | Discharge |
| | Feet. | Sec.-ft. |
| 17..... | 2.7 | 306 |
| 18..... | 2.8 | 32 |
| 19..... | 2.6 | 280 |
| 20..... | 2.5 | 272 |
| 21..... | 2.2 | 221 |
| 22..... | 2.8 | 323 |
| 23..... | 2.6 | 249 |
| 24..... | 2.4 | 255 |
| 25..... | 2.6 | 289 |
| 26..... | 2.8 | 323 |
| 27..... | 2.5 | 272 |
| 28..... | 2.4 | 255 |
| 29..... | 2.3 | 238 |
| 30..... | 2.1 | 205 |

DAILY GAUGE HEIGHT AND DISCHARGE of Little Clearwater River near Green Mountain, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2-0 | 188 | 1-0 | 46 | 0-6 | 13 | 1-3 | 81 | 1-0 | 46 | 0-8 | 27 |
| 2..... | 1-9 | 172 | 1-0 | 46 | 0-6 | 13 | 1-2 | 68 | 1-1 | 56 | 0-8 | 27 |
| 3..... | 1-8 | 156 | 1-0 | 46 | 0-6 | 13 | 1-2 | 68 | 1-0 | 46 | 0-8 | 27 |
| 4..... | 1-7 | 140 | 1-0 | 46 | 0-6 | 13 | 1-2 | 68 | 1-0 | 46 | 0-7 | 20 |
| 5..... | 1-6 | 124 | 0-9 | 36 | 0-6 | 13 | 1-1 | 56 | 0-9 | 36 | 0-7 | 20 |
| 6..... | 1-5 | 109 | 1-4 | 94 | 0-6 | 13 | 1-1 | 56 | 0-9 | 36 | 0-7 | 20 |
| 7..... | 1-4 | 94 | 1-1 | 56 | 0-6 | 13 | 1-0 | 46 | 0-9 | 36 | 0-7 | 20 |
| 8..... | 1-3 | 81 | 1-0 | 46 | 0-7 | 20 | 1-0 | 46 | 0-9 | 36 | 0-7 | 20 |
| 9..... | 1-2 | 68 | 0-9 | 36 | 0-9 | 36 | 1-0 | 46 | 0-9 | 36 | 0-7 | 20 |
| 10..... | 1-2 | 68 | 0-9 | 36 | 0-9 | 36 | 1-0 | 46 | 0-9 | 36 | 0-6 | 13 |
| 11..... | 1-2 | 68 | 0-9 | 36 | 1-2 | 68 | 1-0 | 46 | 0-9 | 36 | 0-6 | 13 |
| 12..... | 1-2 | 68 | 0-9 | 36 | 1-2 | 68 | 0-9 | 36 | 0-9 | 36 | 0-6 | 13 |
| 13..... | 1-2 | 68 | 0-9 | 36 | 1-2 | 68 | 1-1 | 56 | 0-9 | 36 | 0-6 | 13 |
| 14..... | 1-9 | 172 | 0-8 | 27 | 1-0 | 46 | 1-0 | 46 | 1-0 | 46 | 0-7 | 20 |
| 15..... | 2-5 | 272 | 0-8 | 27 | 0-9 | 36 | 1-0 | 46 | 0-9 | 36 | 0-7 | 20 |
| 16..... | 1-6 | 124 | 0-8 | 27 | 0-9 | 36 | 1-0 | 46 | 0-9 | 36 | 0-7 | 20 |
| 17..... | 1-7 | 140 | 0-8 | 27 | 1-1 | 56 | 1-7 | 140 | 0-9 | 36 | 0-7 | 20 |
| 18..... | 1-6 | 124 | 0-8 | 27 | 1-6 | 124 | 1-4 | 94 | 0-9 | 36 | 0-7 | 20 |
| 19..... | 1-4 | 94 | 0-7 | 20 | 1-2 | 68 | 1-2 | 68 | 0-9 | 36 | 0-7 | 20 |
| 20..... | 1-6 | 124 | 0-7 | 20 | 1-2 | 68 | 1-1 | 56 | 0-8 | 27 | 0-7 | 20 |
| 21..... | 1-6 | 124 | 0-8 | 27 | 1-1 | 56 | 1-1 | 56 | 0-8 | 27 | 0-7 | 20 |
| 22..... | 1-4 | 94 | 0-8 | 27 | 1-1 | 56 | 1-0 | 46 | 0-8 | 27 | 0-7 | 20 |
| 23..... | 1-4 | 94 | 0-8 | 27 | 1-2 | 68 | 1-0 | 46 | 0-8 | 27 | 0-7 | 20 |
| 24..... | 1-6 | 124 | 0-8 | 27 | 1-1 | 56 | 0-9 | 36 | 0-9 | 36 | 0-7 | 20 |
| 25..... | 1-4 | 94 | 0-7 | 20 | 1-1 | 56 | 0-9 | 36 | 0-9 | 36 | 0-7 | 20 |
| 26..... | 1-3 | 81 | 0-7 | 20 | 1-1 | 56 | 0-9 | 36 | 0-9 | 36 | 0-7 | 20 |
| 27..... | 1-9 | 172 | 0-7 | 20 | 1-9 | 172 | 0-9 | 36 | 0-8 | 27 | 0-7 | 20 |
| 28..... | 1-6 | 124 | 0-7 | 20 | 1-6 | 124 | 0-9 | 36 | 0-8 | 27 | 0-6 | 13 |
| 29..... | 1-4 | 94 | 0-6 | 13 | 1-6 | 124 | 0-9 | 36 | 0-8 | 27 | 0-6 | 13 |
| 30..... | 1-2 | 68 | 0-6 | 13 | 1-5 | 109 | 1-0 | 46 | 0-8 | 27 | 0-6 | 13 |
| 31..... | 1-1 | 56 | 0-6 | 13 | ..... | ..... | 1-0 | 46 | ..... | ..... | 0-6 | 13 |

MONTHLY DISCHARGE of Little Clearwater River near Green Mountain, for 1914.

(Drainage area, 100 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June..... | 323 | 205 | 276 | 2-76 | 3-08 | 16,423 ¹ |
| July..... | 272 | 56 | 115 | 1-15 | 1-32 | 7,071 |
| August..... | 94 | 13 | 32 | 0-32 | 0-37 | 1,967 |
| September..... | 172 | 13 | 57 | 0-57 | 0-63 | 3,391 |
| October..... | 140 | 36 | 54 | 0-54 | 0-62 | 3,320 |
| November..... | 56 | 27 | 36 | 0-36 | 0-39 | 2,142 |
| December..... | 27 | 13 | 19 | 0-19 | 0-22 | 1,168 |
| The period..... | 323 | 13 | 84-1 | 0-84 | 6-63 | 35,482 |

¹Station was established on June 17; results for June are therefore only approximate. No precipitation records available.

SESSIONAL PAPER No. 25e

CHERRY CREEK (2005).

Location.—Section 14, township 19, range 19, west 6th Meridian.

Records Available.—June 5 to September 1, 1911; April 24 to September 15, 1912; April 19 to October 19, 1913; May 1 to August 19, 1914.

Drainage Area.—Sixty-two square miles.

Gauge.—Standard chain gauge installed during 1914 in canyon, and read daily by F. Bowers, during high water, and twice weekly during low water. To replace station at Cornwall's ranch.

Channel.—Is straight at measuring section. Velocity swift at all stages. Control is fairly good.

Discharge Measurements.—Three discharge measurements were obtained during 1914 by wading at all stages.

Winter Flow.—Stream generally runs dry during August or September.

Accuracy.—Owing to shifting channel, too much reliance cannot be placed on returns from old station, but returns for new station established 1914 point to an exceptionally high degree of accuracy eventually being obtained.

DISCHARGE MEASUREMENTS of Cherry Creek above Bower's Ranch, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|----------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 13..... | E. H. Tredcroft..... | 1055 | 14 | 14 | 5.02 | 1.7 | 70.3 |
| June 11..... | C. Corbould..... | 1915 | 12 | 5.1 | 1.8 | 0.7 | 9.0 |
| July 3..... | do | 1915 | 7 | 1.7 | 0.8 | 0.5 | 1.5 |

An effort will be made to completely rate this station during 1915. See meterings listed under miscellaneous measurements taken at Cornwall's ranch above diversion.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek near Bower's Ranch,
for 1914.

| DAY. | May. | | June. | | |
|------|--------------|-----------|--------------|-----------|-----|
| | Gauge Height | Discharge | Gauge Height | Discharge | |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | |
| 1 | | 14.5 | 0.65 | 6.9 | |
| 2 | | 15.8 | 0.65 | 6.9 | |
| 3 | | 17.2 | 0.60 | 4.9 | |
| 4 | | 18.5 | 0.60 | 4.9 | |
| 5 | | 19.9 | 0.60 | 4.9 | |
| 6 | | 21.2 | 0.60 | 4.9 | |
| 7 | | 22.6 | 0.60 | 4.9 | |
| 8 | | 24.0 | 0.65 | 6.9 | |
| 9 | | 44.0 | 0.65 | 6.9 | |
| 10 | | 65.0 | 0.65 | 6.9 | |
| 11 | | 86.0 | 0.70 | 9.0 | |
| 12 | | 78.2 | 0.70 | 9.0 | |
| 13 | | 1.70 | 70.3 | 0.70 | 9.0 |
| 14 | | 1.70 | 70.3 | 0.65 | 6.9 |
| 15 | | 1.60 | 62.8 | 0.65 | 6.9 |
| 16 | | 1.55 | 59.1 | 0.65 | 6.9 |
| 17 | | 1.45 | 51.9 | 0.60 | 4.9 |
| 18 | | 1.40 | 48.5 | 0.60 | 4.9 |
| 19 | | 1.40 | 48.5 | 0.55 | 3.2 |
| 20 | | | 38.4 | 0.55 | 3.2 |
| 21 | | | 28.2 | 0.55 | 3.2 |
| 22 | | 0.90 | 18.0 | 0.50 | 1.4 |
| 23 | | 0.90 | 18.0 | 0.55 | 3.2 |
| 24 | | 0.85 | 15.5 | 0.55 | 3.2 |
| 25 | | 0.80 | 13.0 | 0.60 | 4.9 |
| 26 | | 0.80 | 13.0 | 0.55 | 3.2 |
| 27 | | 0.75 | 11.0 | 0.55 | 3.2 |
| 28 | | 0.70 | 9.0 | 0.55 | 3.2 |
| 29 | | 0.70 | 9.0 | 0.55 | 3.2 |
| 30 | | 0.65 | 6.9 | 0.55 | 3.2 |
| 31 | | 0.65 | 6.9 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek near Bower's Ranch,
for 1914—*Con.*

| DAY. | July. | | August. | |
|------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-50 | 1-4 | | 0-4 |
| 2 | 0-50 | 1-4 | | 0-3 |
| 3 | 0-50 | 1-4 | 0-30 | 0-3 |
| 4 | 0-45 | 1-1 | | 0-3 |
| 5 | 0-45 | 1-1 | 0-30 | 0-3 |
| 6 | 0-40 | 0-8 | | 0-3 |
| 7 | 0-40 | 0-8 | 0-30 | 0-3 |
| 8 | 0-40 | 0-8 | | 0-3 |
| 9 | 0-35 | 0-5 | | 0-3 |
| 10 | 0-35 | 0-5 | 0-30 | 0-3 |
| 11 | 0-35 | 0-5 | | 0-3 |
| 12 | 0-35 | 0-5 | 0-30 | 0-3 |
| 13 | 0-35 | 0-5 | | 0-3 |
| 14 | 0-30 | 0-3 | 0-30 | 0-3 |
| 15 | 0-30 | 0-3 | | 0-3 |
| 16 | 0-30 | 0-3 | | 0-2 |
| 17 | 0-30 | 0-3 | 0-25 | 0-2 |
| 18 | 0-30 | 0-3 | | 0-2 |
| 19 | 0-30 | 0-3 | 0-25 | 0-2 |
| 20 | | 1-8 | | |
| 21 | 0-55 | 3-2 | | |
| 22 | | 6-1 | | |
| 23 | 0-70 | 9-0 | | |
| 24 | | 8-0 | | |
| 25 | 0-65 | 6-9 | | |
| 26 | | 5-9 | | |
| 27 | 0-60 | 4-9 | | |
| 28 | | 2-8 | | |
| 29 | 0-40 | 0-8 | | |
| 30 | | 0-7 | | |
| 31 | 0-35 | 0-5 | | |

MONTHLY DISCHARGE of Cherry Creek near Bower's Ranch, for 1914.

(Drainage area, 30 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF | |
|------------|---------------------------|----------|-------|-----------------|----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area | Total in acre-feet |
| May | 86 | 6-9 | 33-1 | 1-10 | 1-12 | 2,035 |
| June | 9 | 1-4 | 5-2 | 0-17 | 0-19 | 307 |
| July | 9 | 0-3 | 2-05 | 0-07 | 0-08 | 126-4 |
| August | 0-4 | 0-0 | 0-17 | 0-006 | 0-007 | 10-4 |
| The period | 86 | 0-0 | 10-13 | 0-34 | 1-397 | 2,478-7 |

NOTE.—Station established May 13 to replace station at Cornwall's ranch, where a constantly shifting channel made results unreliable. It was also alleged that a very large loss by seepage occurred between the present station and Cornwall's ranch. Data acquired during 1914 disprove this allegation.

From May 1 to May 13, figures shown have been compiled from miscellaneous measurements at Cornwall's ranch on April 27, May 8, and May 11, by interpolation.

The creek stopped flowing at the gauge on August 19.

ESSELL CREEK (2011).

Location.—Section 36, township 17, range 14, west 6th meridian.

Records Available.—May 25 to September 30, 1911; April 1 to September 7, 1912; April 16 to September 14, 1913; April 1 to December 4, 1914.

Drainage Area.—Six square miles.

Gauge.—Standard staff gauge read tri-weekly by T. F. Teagle.

Channel.—The channel is gravelly and permanent. Control is good, and velocities are not excessive.

Discharge Measurements.—Well-distributed meterings have been taken at all stages of water.

Winter Flow—Winter conditions are not, as a rule, severe; the stream is usually dry during the winter months.

A storage dam on Summit lake controls its flow, which is augmented by a diversion from Monte creek.

Accuracy.—The accuracy of results on the whole is fairly high, and should fall within ten per cent.

DISCHARGE MEASUREMENTS of Essell Creek below Summit Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-----------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 7..... | E. M. Dann & E. H. Tredcroft..... | 1055 | 17 | 11.5 | 3.06 | 1.47 | 35.4 |
| June 24..... | C. B. Corbould..... | 1915 | 11 | 9.1 | 2.47 | 1.30 | 22.5 |
| July 22..... | "..... | 1915 | 9.5 | 5.23 | 0.80 | 0.95 | 4.2 |
| Sept. 25..... | "..... | 1915 | 5.5 | 1.03 | 0.56 | 0.70 | 0.6 |

For further measurements see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Essell Creek below Summit Lake, for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|-----------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-90 | 3-2 | | 25-8 | | 35-0 |
| 2 | | 3-3 | 1-38 | 28-5 | | 34-5 |
| 3 | | 3-4 | | 32-6 | 1-45 | 34-0 |
| 4 | 0-91 | 3-5 | | 36-7 | | 36-7 |
| 5 | | 3-4 | | 40-8 | | 39-5 |
| 6 | | 3-4 | 1-58 | 44-8 | 1-55 | 42-2 |
| 7 | | 3-3 | | 48-3 | | 42-7 |
| 8 | 0-90 | 3-2 | | 51-8 | | 43-1 |
| 9 | | 3-8 | 1-70 | 55-3 | | 43-5 |
| 10 | | 4-4 | | 55-3 | 1-57 | 44-0 |
| 11 | 0-97 | 5-0 | | 55-3 | | 42-5 |
| 12 | | 4-6 | | 55-3 | | 41-1 |
| 13 | | 4-1 | 1-70 | 55-3 | 1-52 | 39-7 |
| 14 | | 3-6 | | 66-3 | | 38-6 |
| 15 | 0-90 | 3-2 | | 77-3 | | 37-6 |
| 16 | | 3-4 | 2-05 | 88-3 | | 36-6 |
| 17 | | 3-6 | | 82-4 | 1-47 | 35-6 |
| 18 | 0-92 | 3-7 | | 76-4 | | 33-0 |
| 19 | | 3-9 | | 70-4 | | 30-4 |
| 20 | | 4-1 | 1-86 | 64-4 | 1-37 | 27-8 |
| 21 | | 4-3 | | 62-0 | | 27-4 |
| 22 | 0-95 | 4-5 | | 59-5 | | 27-0 |
| 23 | | 4-7 | 1-72 | 57-1 | | 26-6 |
| 24 | | 4-8 | | 55-0 | 1-35 | 26-2 |
| 25 | 0-97 | 5-0 | | 52-8 | | 27-5 |
| 26 | | 8-9 | | 50-7 | | 28-8 |
| 27 | | 12-8 | | 48-6 | 1-40 | 30-0 |
| 28 | | 16-7 | 1-60 | 46-5 | | 30-0 |
| 29 | 1-27 | 20-5 | | 42-8 | | 30-0 |
| 30 | | 23-2 | | 39-2 | | 30-0 |
| 31 | | | 1-47 | 35-6 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Essell Creek below Summit Lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-40 | 30-0 | 1-10 | 10-2 | | 1-7 | | 0-9 | | 2-5 | 0-82 | 2-0 |
| 2 | | 28-8 | | 9-1 | 0-80 | 1-7 | | 1-0 | | 2-5 | | 2-1 |
| 3 | | 27-5 | | 8-0 | | 1-6 | 0-75 | 1-2 | | 2-5 | | 2-3 |
| 4 | 1-35 | 26-2 | | 6-9 | | 1-4 | | 1-1 | 0-85 | 2-5 | 0-85 | 2-5 |
| 5 | | 24-8 | 1-00 | 5-8 | 0-75 | 1-2 | | 1-0 | | 2-5 | | |
| 6 | | 23-4 | | 5-6 | | 1-2 | | 0-9 | | 2-6 | | |
| 7 | | 22-0 | | 5-3 | | 1-2 | 0-72 | 0-8 | 0-87 | 2-7 | | |
| 8 | 1-27 | 20-5 | 0-97 | 5-0 | | 1-2 | | 0-7 | | 2-7 | | |
| 9 | | 21-2 | | 5-2 | 0-75 | 1-2 | | 0-6 | | 2-6 | | |
| 10 | | 21-8 | | 5-4 | | 1-0 | 0-70 | 0-6 | | 2-6 | | |
| 11 | 1-30 | 22-5 | | 5-6 | | 0-8 | | 0-8 | 0-85 | 2-5 | | |
| 12 | | 22-0 | 1-00 | 5-8 | 0-70 | 0-6 | | 1-0 | | 2-3 | | |
| 13 | | 21-5 | | 4-9 | | 0-6 | | 1-2 | | 2-0 | | |
| 14 | | 21-0 | | 4-0 | | 0-6 | 0-77 | 1-4 | 0-80 | 1-7 | | |
| 15 | 1-27 | 20-5 | 0-90 | 3-2 | | 0-6 | | 1-5 | | 1-9 | | |
| 16 | | 17-0 | | 3-2 | 0-70 | 0-6 | | 1-6 | | 2-2 | | |
| 17 | | 13-6 | | 3-2 | | 0-6 | 0-80 | 1-7 | | 2-4 | | |
| 18 | 1-10 | 10-2 | | 3-2 | | 0-6 | | 1-7 | 0-87 | 2-7 | | |
| 19 | | 8-9 | 0-90 | 3-2 | 0-70 | 0-6 | | 1-7 | | 2-7 | | |
| 20 | | 7-6 | | 3-6 | | 0-6 | | 1-7 | | 2-6 | | |
| 21 | | 6-3 | | 4-0 | | 0-6 | 0-80 | 1-7 | 0-85 | 2-5 | | |
| 22 | 0-97 | 5-0 | 0-95 | 4-5 | | 0-6 | | 2-0 | | 2-5 | | |
| 23 | | 4-4 | | 3-8 | 0-70 | 0-6 | | 2-2 | | 2-6 | | |
| 24 | | 3-8 | | 3-1 | | 0-8 | 0-85 | 2-5 | | 2-7 | | |
| 25 | 0-90 | 3-2 | | 2-4 | | 1-0 | | 2-5 | 0-87 | 2-7 | | |
| 26 | | 5-2 | 0-80 | 1-7 | 0-75 | 1-2 | | 2-5 | | 2-7 | | |
| 27 | | 7-2 | | 1-7 | | 1-1 | | 2-5 | | 2-6 | | |
| 28 | | 9-2 | | 1-7 | | 1-0 | 0-85 | 2-5 | 0-85 | 2-5 | | |
| 29 | 1-12 | 11-3 | 0-80 | 1-7 | | 0-9 | | 2-5 | | 2-3 | | |
| 30 | | 11-0 | | 1-7 | 0-72 | 0-8 | | 2-5 | | 2-1 | | |
| 31 | | 10-6 | | 1-7 | | | 0-85 | 2-5 | | | | |

MONTHLY DISCHARGE of Essell Creek below Summit Lake, for 1914.

(Drainage area, 6 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | RUN-OFF. |
|------------|---------------------------|----------|----------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Total in acre-feet. |
| | | | | |
| April... | 23-2 | 3-2 | 6-0 | 356-5 |
| May..... | 88-3 | 25-5 | 53-6 | 3,295-1 |
| June.... | 44-0 | 26-2 | 34-7 | 2,066-0 |
| July.... | 30-0 | 3-2 | 15-7 | 965-4 |
| August.. | 10-2 | 1-7 | 4-3 | 264-4 |
| September. | 1-7 | 0-6 | 0-9 | 53-5 |
| October.. | 2-5 | 0-6 | 1-6 | 98-4 |
| November | 2-7 | 1-7 | 2-5 | 149-0 |
| December.. | 2-5 | 2-0 | For period Dec. 4th. | Dec. 1st to |
| The period | 88-3 | 0-6 | 14-9 | 7,248-3 |

NOTE.—Winter conditions obtained after December 4.

The indicated run-off of Essell creek is not a true function of the drainage area, since its natural flow is augmented by a diversion from Monte creek to Summit lake. The flow out of Summit lake is also artificially controlled by a dam at its outlet.

No precipitation records available.

SESSIONAL PAPER No. 25e

GUICHON CREEK (2014).

Location.—Near Mamit lake, Water District No. 3.

Records Available.— June 3 to December 31, 1911; January 1 to November 14, 1912; April 26 to September 29, 1913; April 1 to November 30, 1914.

Drainage Area.—Three hundred and fifteen square miles.

Gauge.—Standard vertical staff gauge read daily by O. Quenville.

Channel.—Channel is straight at measuring section. Velocities fairly high. Bed of stream composed of sand and gravel, and considered permanent.

Discharge Measurements.—Twenty three discharge measurements have been taken on this creek. Curve is well defined,

Winter Flow.—Ice conditions generally prevail on this stream throughout January and February.

Accuracy.—Curve has been well defined and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Guichon Creek above Mamit Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|------------------|-------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 16. | C. B. Corbould. | 1,915 | 26.0 | 58.4 | 1.7 | 2.9 | 98.9 |

For further meterings made at other points on Guichon creek during 1914, see list of miscellaneous measurements. For other hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Guichon Creek near Mamit Lake,
for 1914.

| DAY. | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-52 | 28-9 | 4-85 | 229-5 | 3-55 | 139-5 |
| 2..... | 1-40 | 23-0 | 5-35 | 277-7 | 3-35 | 126-7 |
| 3..... | 1-45 | 25-5 | 5-80 | 355-0 | 3-25 | 126-7 |
| 4..... | 1-90 | 46-0 | 5-82 | 360-0 | 3-05 | 108-2 |
| 5..... | 2-90 | 98-5 | 5-97 | 397-4 | 3-00 | 105-0 |
| 6..... | 3-15 | 114-5 | 6-00 | 405-0 | 2-85 | 95-8 |
| 7..... | 3-05 | 108-2 | 5-00 | 405-0 | 2-80 | 93-0 |
| 8..... | 2-95 | 101-7 | 5-90 | 379-0 | 2-80 | 93-0 |
| 9..... | 3-02 | 106-3 | 5-92 | 384-2 | 2-85 | 95-8 |
| 10..... | 2-92 | 99-8 | 6-25 | 483-7 | 3-05 | 108-2 |
| 11..... | 3-10 | 111-5 | 6-32 | 506-8 | 3-10 | 111-5 |
| 12..... | 3-22 | 118-8 | 6-17 | 454-7 | 3-10 | 111-5 |
| 13..... | 3-60 | 142-5 | 6-12 | 441-5 | 3-00 | 105-0 |
| 14..... | 3-77 | 153-2 | 6-15 | 451-2 | 2-95 | 101-7 |
| 15..... | 3-95 | 165-2 | 6-15 | 451-2 | 2-95 | 101-7 |
| 16..... | 4-15 | 178-7 | 6-10 | 435-0 | 2-85 | 95-8 |
| 17..... | 4-07 | 173-0 | 6-10 | 435-0 | 2-75 | 90-2 |
| 18..... | 4-10 | 175-0 | 6-10 | 435-0 | 2-50 | 76-5 |
| 19..... | 4-15 | 178-7 | 6-07 | 426-0 | 2-32 | 66-6 |
| 20..... | 4-50 | 203-0 | 5-95 | 392-0 | 2-32 | 66-6 |
| 21..... | 4-57 | 208-0 | 5-85 | 367-0 | 2-30 | 65-5 |
| 22..... | 4-40 | 195-2 | 5-75 | 344-2 | 2-30 | 65-5 |
| 23..... | 4-40 | 195-2 | 5-65 | 323-7 | 2-30 | 65-5 |
| 24..... | 4-40 | 195-2 | 5-35 | 277-7 | 2-30 | 65-5 |
| 25..... | 4-40 | 195-2 | 5-20 | 261-5 | 2-30 | 65-5 |
| 26..... | 4-32 | 190-2 | 4-70 | 218-0 | 2-30 | 65-5 |
| 27..... | 4-35 | 192-1 | 4-70 | 218-0 | 2-30 | 65-5 |
| 28..... | 4-30 | 189-0 | 4-60 | 210-1 | 2-30 | 65-5 |
| 29..... | 4-27 | 187-0 | 4-60 | 210-1 | 2-30 | 65-5 |
| 30..... | 4-32 | 190-2 | 3-95 | 165-2 | 2-30 | 65-5 |
| 31..... | | | 3-70 | 149-0 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Guichon Creek near Mamit Lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-30 | 65.5 | 1-50 | 28-0 | 1-10 | 12-0 | 1-15 | 14-0 | 1-20 | 16-0 |
| 2 | 2-20 | 60.5 | 1-47 | 26.5 | 1-10 | 12-0 | 1-15 | 14-0 | 1-20 | 16-0 |
| 3 | 2-10 | 55.5 | 1-45 | 25.5 | 1-10 | 12-0 | 1-15 | 14-0 | 1-20 | 16-0 |
| 4 | 2-00 | 50.5 | 1-45 | 25.5 | 1-10 | 12-0 | 1-15 | 14-0 | 1-20 | 16-0 |
| 5 | 1-92 | 46.9 | 1-45 | 25.5 | 1-10 | 12-0 | 1-15 | 14-0 | 1-20 | 16-0 |
| 6 | 1-90 | 46.0 | 1-45 | 25.5 | 1-05 | 10-0 | 1-15 | 14-0 | 1-20 | 16-0 |
| 7 | 1-90 | 46.0 | 1-45 | 25.5 | 1-07 | 10-8 | 1-15 | 14-0 | 1-37 | 21.8 |
| 8 | 1-90 | 46.0 | 1-50 | 28-0 | 1-10 | 12-0 | 1-15 | 14-0 | 1-30 | 19-0 |
| 9 | 1-80 | 41-0 | 1-55 | 30-2 | 1-15 | 14-0 | 1-15 | 14-0 | 1-25 | 17.5 |
| 10 | 1-80 | 41-0 | 1-60 | 32.5 | 1-20 | 16-0 | 1-17 | 14-8 | 1-25 | 17.5 |
| 11 | 1-80 | 41-0 | 1-52 | 28-9 | 1-20 | 16-0 | 1-20 | 16-0 | 1-20 | 16-0 |
| 12 | 1-75 | 39-0 | 1-42 | 24-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-20 | 16-0 |
| 13 | 1-70 | 37-0 | 1-30 | 19-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-20 | 16-0 |
| 14 | 1-65 | 34.7 | 1-30 | 19-0 | 1-25 | 17.5 | 1-40 | 23-0 | 1-20 | 16-0 |
| 15 | 1-62 | 33.4 | 1-30 | 19-0 | 1-30 | 19-0 | 1-37 | 21.8 | 1-20 | 16-0 |
| 16 | 1-60 | 32.5 | 1-30 | 19-0 | 1-30 | 19-0 | 1-25 | 17.5 | 1-20 | 16-0 |
| 17 | 1-60 | 32.5 | 1-30 | 19-0 | 1-30 | 19-0 | 1-25 | 17.5 | 1-20 | 16-0 |
| 18 | 1-60 | 32.5 | 1-30 | 19-0 | 1-30 | 19-0 | 1-22 | 16-6 | 1-20 | 16-0 |
| 19 | 1-60 | 32.5 | 1-27 | 18-1 | 1-35 | 21-0 | 1-20 | 16-0 | 1-20 | 16-0 |
| 20 | 1-50 | 28-0 | 1-25 | 17.5 | 1-35 | 21-0 | 1-20 | 16-0 | 1-20 | 16-0 |
| 21 | 1-50 | 28-0 | 1-25 | 17.5 | 1-25 | 17.5 | 1-20 | 16-0 | 1-25 | 17.5 |
| 22 | 1-50 | 28-0 | 1-25 | 17.5 | 1-20 | 16-0 | 1-20 | 16-0 | 1-25 | 17.5 |
| 23 | 1-50 | 28-0 | 1-25 | 17.5 | 1-20 | 16-0 | 1-20 | 16-0 | 1-25 | 17.5 |
| 24 | 1-50 | 28-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-25 | 17.5 |
| 25 | 1-50 | 28-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-25 | 17.5 |
| 26 | 1-50 | 28-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-25 | 16.9 |
| 27 | 1-40 | 23-0 | 1-10 | 12-0 | 1-20 | 16-0 | 1-20 | 16-0 | 1-25 | 17.5 |
| 28 | 1-40 | 23-0 | 1-10 | 12-0 | 1-17 | 14-8 | 1-20 | 16-0 | 1-20 | 16-0 |
| 29 | 1-40 | 23-0 | 1-20 | 16-0 | 1-15 | 14-0 | 1-20 | 16-0 | 1-20 | 16-0 |
| 30 | 1-40 | 23-0 | 1-15 | 14-0 | 1-15 | 14-0 | 1-20 | 16-0 | 1-20 | 16-0 |
| 31 | 1-40 | 23-0 | 1-15 | 14-0 | ..... | ..... | 1-20 | 16-0 | ..... | ..... |

MONTHLY DISCHARGE of Guichon Creek near Mamit Lake, for 1914.

(Drainage area, 315 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 208-0 | 23-0 | 142-9 | 0-45 | 0-5 | 8,503 |
| May | 506-8 | 149-0 | 346-7 | 1-1 | 1-2 | 21,317 |
| June | 139-5 | 65-5 | 89-4 | 0-28 | 0-31 | 5,320 |
| July | 65-5 | 23-0 | 36-3 | 0-11 | 0-13 | 2,232 |
| August | 32-5 | 12-0 | 20-7 | 0-07 | 0-08 | 1,273 |
| September | 21-0 | 12-0 | 15-4 | 0-05 | 0-06 | 916 |
| October | 21-8 | 14-0 | 15-9 | 0-05 | 0-06 | 978 |
| November | 21-8 | 16-0 | 16-7 | 0-05 | 0-06 | 994 |
| December | ..... | ..... | ..... | ..... | ..... | ..... |
| The period. | 506-8 | 12-0 | 85-5 | 0-27 | 2-40 | 41,533 |

NOTE.—No precipitation data are available, but the total rainfall (including snowfall expressed in terms of rainfall) is probably 15 inches.

HEFFLEY CREEK—UPPER (2019).

Location.—Section 9, township 22, range 16, west 6th meridian.

Records Available.—May 25 to December 8, 1911; April 1 to September 20, 1912; May 11 to September 19, 1913; May 1 to December 9, 1914.

Drainage Area.—Twenty-eight square miles.

Gauge.—Standard vertical staff gauge read daily by F. S. Lawrence.

Channel.—Straight at measuring section and permanent bed.

Discharge Measurements.—Curve is well defined with series of meterings at all stages.

Winter Flow.—Ice conditions generally prevail during January and February. A dam at Heffley lake regulates the flow.

Accuracy.—The accuracy is considered to be fairly high, results should fall within 10 per cent at all stages.

DISCHARGE MEASUREMENTS of Heffley Creek below Heffley Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 28..... | K. G. Chisholm..... | 1,055 | 8-0 | 5-30 | 0-77 | 3-75 | 4-1 |
| June 3..... | C. B. Corbould..... | 1,915 | 10-0 | 7-03 | 0-90 | 3-92 | 6-3 |
| June 30..... | do..... | 1,915 | 10-0 | 6-50 | 0-91 | 3-90 | 5-9 |
| Aug. 11..... | do..... | 1,915 | 10-0 | 10-60 | 2-10 | 4-24 | 22-3 |
| Oct. 29..... | do..... | 1,673 | 8-0 | 3-47 | 0-28 | 3-40 | 1-0 |

For further measurements during 1914 on this stream, see Heffley Creek Lower Station, and for further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Hefhley Creek below Hefhley Lake,
for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 3-80 | 4-5 | 3-90 | 5-9 |
| 2 | | | 3-90 | 5-9 | 3-90 | 5-9 |
| 3 | | 3-1 | 4-00 | 8-3 | 3-90 | 5-9 |
| 4 | | 4-4 | 4-00 | 8-3 | 3-92 | 6-3 |
| 5 | | 5-7 | 4-00 | 8-3 | 3-95 | 7-1 |
| 6 | | 4-4 | 3-90 | 5-9 | 3-95 | 7-1 |
| 7 | | 4-4 | 3-90 | 5-9 | 4-05 | 10-2 |
| 8 | | 4-4 | 3-90 | 5-9 | 4-04 | 10-2 |
| 9 | | 4-4 | 3-95 | 7-1 | 4-10 | 12-2 |
| 10 | | 4-4 | 4-00 | 8-3 | 4-10 | 12-2 |
| 11 | | 4-4 | 4-65 | 10-2 | 4-10 | 12-2 |
| 12 | | 4-4 | 4-25 | 23-2 | 4-05 | 10-2 |
| 13 | | 4-4 | 4-30 | 27-8 | 4-05 | 10-2 |
| 14 | | 5-7 | 4-30 | 27-8 | 4-05 | 10-2 |
| 15 | | 5-7 | 4-40 | 38-1 | 4-00 | 8-3 |
| 16 | | 5-7 | 4-55 | 56-5 | 4-00 | 8-3 |
| 17 | | 5-7 | 4-55 | 56-5 | 4-00 | 8-3 |
| 18 | | 5-7 | 4-55 | 56-5 | 4-00 | 8-3 |
| 19 | | 5-7 | 4-50 | 49-8 | 3-95 | 7-1 |
| 20 | | 5-7 | 4-50 | 49-8 | 3-95 | 7-1 |
| 21 | | 3-6 | 4-45 | 43-9 | 3-90 | 5-9 |
| 22 | | 2-8 | 4-30 | 27-8 | 3-85 | 5-2 |
| 23 | | 2-8 | 4-05 | 10-2 | 3-90 | 5-9 |
| 24 | | 2-8 | 4-00 | 8-3 | 3-95 | 7-1 |
| 25 | | 3-3 | 3-95 | 7-1 | 4-00 | 8-3 |
| 26 | | 3-3 | 3-95 | 7-1 | 3-95 | 7-1 |
| 27 | | 2-9 | 3-90 | 5-9 | 3-90 | 5-9 |
| 28 | | 4-0 | 3-95 | 7-1 | 3-90 | 5-9 |
| 29 | | 4-0 | 3-90 | 5-9 | 3-90 | 5-9 |
| 30 | | 4-5 | 3-90 | 5-9 | 3-90 | 5-9 |
| 31 | | | 3-90 | 5-9 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Hefley Creek below Hefley Lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3-85 | 5-2 | 4-25 | 23-2 | 3-65 | 3-1 | 5-0 | 2-2 | 3-49 | 2-2 | 3-45 | 2-0 |
| 2..... | 3-85 | 5-2 | 4-25 | 23-2 | 3-65 | 3-1 | 3-50 | 2-2 | 3-45 | 2-0 | 3-45 | 2-0 |
| 3..... | 3-80 | 4-5 | 4-25 | 23-2 | 3-60 | 2-8 | 3-50 | 2-2 | 3-45 | 2-0 | 3-45 | 2-0 |
| 4..... | 3-90 | 5-9 | 4-25 | 23-2 | 3-58 | 2-7 | 3-50 | 2-2 | 3-45 | 2-0 | 3-45 | 2-0 |
| 5..... | 3-90 | 5-9 | 4-25 | 23-2 | 3-55 | 2-5 | 3-50 | 2-2 | 3-45 | 2-0 | 3-45 | 2-0 |
| 6..... | 3-90 | 5-9 | 4-25 | 23-2 | 3-55 | 2-5 | 3-50 | 2-2 | 3-45 | 2-0 | 3-45 | 2-0 |
| 7..... | 4-00 | 8-3 | 4-25 | 23-2 | 3-55 | 2-5 | 3-50 | 2-2 | 3-45 | 2-0 | 3-42 | 1-9 |
| 8..... | 4-00 | 8-3 | 4-20 | 18-7 | 3-55 | 2-5 | 3-47 | 2-1 | 3-48 | 2-1 | 3-40 | 1-8 |
| 9..... | 4-00 | 8-3 | 4-15 | 15-4 | 3-55 | 2-5 | 3-45 | 2-0 | 3-46 | 2-0 | ..... | ..... |
| 10..... | 4-00 | 8-3 | 4-10 | 12-2 | 3-55 | 2-5 | 3-43 | 1-9 | 3-46 | 2-0 | ..... | ..... |
| 11..... | 3-95 | 7-1 | 4-25 | 23-2 | 3-55 | 2-5 | 3-43 | 1-9 | 3-47 | 2-1 | ..... | ..... |
| 12..... | 3-90 | 5-9 | 4-20 | 18-7 | 3-55 | 2-5 | 3-45 | 2-0 | 3-48 | 2-1 | ..... | ..... |
| 13..... | 3-85 | 5-2 | 4-15 | 15-1 | 3-55 | 2-5 | 3-45 | 2-0 | 3-48 | 2-1 | ..... | ..... |
| 14..... | 3-85 | 5-2 | 4-15 | 15-1 | 3-58 | 2-7 | 3-45 | 2-0 | 3-48 | 2-1 | ..... | ..... |
| 15..... | 3-90 | 5-9 | 4-10 | 12-2 | 3-58 | 2-7 | 3-45 | 2-0 | 3-48 | 2-1 | ..... | ..... |
| 16..... | 3-85 | 5-2 | 4-05 | 10-2 | 3-55 | 2-5 | 3-45 | 2-0 | 3-47 | 2-1 | ..... | ..... |
| 17..... | 3-80 | 4-5 | 4-00 | 8-3 | 3-55 | 2-5 | 3-46 | 2-1 | 3-46 | 2-0 | ..... | ..... |
| 18..... | 3-80 | 4-5 | 4-00 | 8-3 | 3-55 | 2-5 | 3-48 | 2-1 | 3-45 | 2-0 | ..... | ..... |
| 19..... | 3-75 | 4-0 | 4-00 | 8-3 | 3-55 | 2-5 | 3-49 | 2-2 | 3-45 | 2-0 | ..... | ..... |
| 20..... | 3-80 | 4-5 | 3-95 | 7-1 | 3-55 | 2-5 | 3-49 | 2-2 | 3-45 | 2-0 | ..... | ..... |
| 21..... | 4-00 | 8-3 | 3-95 | 7-1 | 3-55 | 2-5 | 3-45 | 2-0 | 3-43 | 1-9 | ..... | ..... |
| 22..... | 4-00 | 8-3 | 3-90 | 5-9 | 3-55 | 2-5 | 3-45 | 2-0 | 3-43 | 1-9 | ..... | ..... |
| 23..... | 4-05 | 10-2 | 3-85 | 5-2 | 3-55 | 2-5 | 3-45 | 2-0 | 3-42 | 1-9 | ..... | ..... |
| 24..... | 4-20 | 18-7 | 3-80 | 4-5 | 3-55 | 2-5 | 3-42 | 1-9 | 3-42 | 1-9 | ..... | ..... |
| 25..... | 4-20 | 18-7 | 3-75 | 4-0 | 3-55 | 2-5 | 3-41 | 1-8 | 3-45 | 2-0 | ..... | ..... |
| 26..... | 4-20 | 18-7 | 3-75 | 4-0 | 3-55 | 2-5 | 3-41 | 1-8 | 3-45 | 2-0 | ..... | ..... |
| 27..... | 4-20 | 18-7 | 3-75 | 4-0 | 3-55 | 2-5 | 3-41 | 1-8 | 3-45 | 2-0 | ..... | ..... |
| 28..... | 4-20 | 18-7 | 3-75 | 4-0 | 3-51 | 2-3 | 3-40 | 1-8 | 3-45 | 2-0 | ..... | ..... |
| 29..... | 4-20 | 18-7 | 3-75 | 4-0 | 3-50 | 2-2 | 3-40 | 1-8 | 3-45 | 2-0 | ..... | ..... |
| 30..... | 4-20 | 18-7 | 3-65 | 3-1 | 3-50 | 2-2 | 3-40 | 1-8 | 3-45 | 2-0 | ..... | ..... |
| 31..... | 4-25 | 23-2 | 3-60 | 2-8 | ..... | ..... | 3-40 | 1-8 | ..... | ..... | ..... | ..... |

MONTHLY DISCHARGE of Hefley Creek below Hefley Lake, for 1914.

(Drainage area, 28 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------------|---------------------------|----------|-------------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April..... | 5-7 | 2-8 | 4-4 | 0-15 | 0-17 | 262 |
| May..... | 56-5 | 4-5 | 19-3 | 0-7 | 0-8 | 1,187 |
| June..... | 12-2 | 5-9 | 7-9 | 0-3 | 0-33 | 470 |
| July..... | 23-2 | 4-0 | 9-6 | 0-3 | 0-35 | 590 |
| August..... | 23-2 | 2-8 | 12-3 | 0-4 | 0-46 | 756 |
| September..... | 3-1 | 2-2 | 2-5 | 0-09 | 0-10 | 149 |
| October..... | 2-2 | 1-8 | 2-0 | 0-07 | 0-08 | 123 |
| November..... | 2-2 | 1-9 | 2-0 | 0-07 | 0-08 | 119 |
| December..... | 2-0 | 1-8 | (for period | December 1 | to December 8.) | ..... |
| The period..... | 56-5 | 1-8 | 7-5 | 0-26 | 2-37 | 3,656 |

NOTE.—Ice conditions after December 8.

April flow compiled from flow at Hefley Creek (upper station) plus the flow in Anderson's and Crawshaw's diversions of Hefley creek.

Regular station established at outlet of Hefley lake on April 27 to replace the three former stations mentioned above. The flow at this station is artificially controlled to some extent by a dam on Hefley Lake.

SESSIONAL PAPER No. 25e

HEFFLEY CREEK, LOWER (2018).

Location.—Section 11, township 22, range 17, west 6th meridian.

Records Available.—August 19 to October 31, 1911; April 3 to September 15, 1912; April 13 to September 15, 1913; April 1 to December 6, 1914.

Drainage Area.—65 square miles.

Gauge.—Vertical staff gauge read daily by Mrs J. Austin.

Channel.—About 15 feet wide with rocky bed. The flow varies from a minimum of zero to a maximum of 55 cubic feet per second. The flow is partly subject to artificial regulation by a dam on Heffley lake.

Discharge Measurements.—Stream is well rated by well-distributed meterings.

Winter Flow.—Stream usually frozen over during winter months.

Accuracy.—High. Results computed from a well-rated curve.

DISCHARGE MEASUREMENTS of HEFFLEY Creek (Lower) at mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 1..... | C. B. Corbould..... | 1915 | 10 | 5.75 | 1.30 | 1.20 | 7.5 |
| " 29..... | "..... | 1915 | 8 | 5.50 | 1.21 | 1.10 | 6.7 |
| Aug. 14..... | "..... | 1915 | 8 | 5.70 | 1.21 | 1.15 | 6.9 |
| Sept. 8..... | E. H. Trederoft and C. B. Corbould..... | 1923 | 7.0 | 2.50 | 0.30 | 0.80 | 0.8 |
| Oct. 29..... | C. B. Corbould..... | 1673 | 7.5 | 4.60 | 0.57 | 1.00 | 2.6 |

For further measurements during 1914 on this stream, see Heffley Creek Upper Station, and for further hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Hefley Creek (Lower) near mouth,
for 1914.

| Day. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 1-05 | 4-3 | 1-50 | 18-4 | 1-20 | 8-1 |
| 2. | 1-05 | 4-3 | 1-50 | 18-4 | 1-17 | 7-3 |
| 3. | 1-05 | 4-3 | 1-75 | 31-7 | 1-12 | 5-9 |
| 4. | 1-10 | 5-4 | 1-75 | 31-7 | 1-12 | 5-9 |
| 5. | 1-20 | 8-1 | 1-65 | 25-6 | 1-12 | 5-9 |
| 6. | 1-20 | 8-1 | 1-60 | 23-3 | 1-10 | 5-4 |
| 7. | 1-20 | 8-1 | 1-60 | 23-3 | 1-20 | 8-1 |
| 8. | 1-20 | 8-1 | 1-57 | 21-8 | 1-25 | 9-5 |
| 9. | 1-15 | 6-7 | 1-57 | 21-8 | 1-30 | 11-0 |
| 10. | 1-15 | 6-7 | 1-75 | 31-7 | 1-37 | 13-3 |
| 11. | 1-12 | 5-9 | 1-75 | 31-7 | 1-37 | 13-3 |
| 12. | 1-15 | 6-7 | 1-80 | 35-5 | 1-35 | 12-6 |
| 13. | 1-20 | 8-1 | 1-90 | 42-6 | 1-35 | 12-6 |
| 14. | 1-20 | 8-1 | 1-90 | 42-6 | 1-35 | 12-6 |
| 15. | 1-22 | 8-7 | 2-00 | 50-3 | 1-32 | 11-6 |
| 16. | 1-35 | 12-6 | 2-00 | 50-3 | 1-32 | 11-6 |
| 17. | 1-50 | 18-4 | 2-05 | 54-5 | 1-30 | 11-0 |
| 18. | 1-50 | 18-4 | 2-05 | 54-5 | 1-25 | 9-5 |
| 19. | 1-50 | 18-4 | 2-00 | 50-3 | 1-25 | 9-5 |
| 20. | 1-50 | 18-4 | 1-90 | 42-6 | 1-15 | 6-7 |
| 21. | 1-47 | 17-2 | 1-85 | 39-1 | 1-05 | 4-3 |
| 22. | 1-40 | 14-3 | 1-80 | 35-5 | 1-05 | 4-3 |
| 23. | 1-40 | 14-3 | 1-70 | 27-9 | 1-07 | 4-7 |
| 24. | 1-40 | 14-3 | 1-55 | 20-8 | 1-10 | 5-4 |
| 25. | 1-40 | 14-3 | 1-40 | 14-3 | 1-15 | 6-7 |
| 26. | 1-40 | 14-3 | 1-35 | 12-6 | 1-20 | 8-1 |
| 27. | 1-40 | 14-3 | 1-35 | 12-6 | 1-20 | 8-1 |
| 28. | 1-40 | 14-3 | 1-30 | 11-0 | 1-15 | 6-7 |
| 29. | 1-40 | 14-3 | 1-30 | 11-0 | 1-15 | 6-7 |
| 30. | 1-40 | 14-3 | 1-30 | 11-0 | 1-10 | 5-4 |
| 31. | | | 1-30 | 11-0 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Heflley Creek (Lower) at mouth, for 1914.—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft | Feet. | Sec.-ft | Feet. | Sec.-ft | Feet. | Sec.-ft | Feet. | Sec.-ft | Feet. | Sec.-ft. |
| 1 | 1.07 | 4.7 | 1.20 | 8.1 | 0.77 | 0.7 | 0.95 | 2.5 | 1.00 | 3.2 | 1.05 | 4.3 |
| 2 | 1.05 | 4.3 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.05 | 4.3 |
| 3 | 1.05 | 4.3 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.07 | 4.7 |
| 4 | 1.05 | 4.3 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.07 | 4.7 |
| 5 | 1.02 | 3.6 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.07 | 4.7 |
| 6 | 1.00 | 3.2 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.07 | 4.7 |
| 7 | 1.00 | 3.2 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 0.90 | 1.7 | | |
| 8 | 1.62 | 3.6 | 1.20 | 8.1 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | | |
| 9 | 1.00 | 3.2 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | | |
| 10 | 1.00 | 3.2 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | | |
| 11 | 1.00 | 3.2 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | | |
| 12 | 1.00 | 3.2 | 1.25 | 9.5 | 0.80 | 0.8 | 0.95 | 2.5 | 0.97 | 2.7 | | |
| 13 | 0.97 | 2.7 | 1.20 | 8.1 | 0.80 | 0.8 | 0.95 | 2.5 | 0.97 | 2.7 | | |
| 14 | 0.97 | 2.7 | 1.15 | 6.7 | 0.85 | 1.3 | 0.95 | 2.5 | 0.97 | 2.7 | | |
| 15 | 0.97 | 2.7 | 1.15 | 6.7 | 0.90 | 1.7 | 0.97 | 2.7 | 0.97 | 2.7 | | |
| 16 | 0.95 | 2.5 | 1.10 | 8.1 | 0.90 | 1.7 | 0.97 | 2.7 | 0.97 | 2.7 | | |
| 17 | 0.95 | 2.5 | 1.05 | 4.3 | 0.90 | 1.7 | 0.97 | 2.7 | 1.00 | 3.2 | | |
| 18 | 0.95 | 2.5 | 1.02 | 3.6 | 0.90 | 1.7 | 0.97 | 2.7 | 1.02 | 3.6 | | |
| 19 | 0.90 | 1.7 | 1.00 | 3.2 | 0.90 | 1.7 | 0.97 | 2.7 | 1.02 | 3.6 | | |
| 20 | 0.90 | 1.7 | 0.95 | 2.5 | 0.95 | 2.5 | 0.97 | 2.7 | 1.07 | 4.7 | | |
| 21 | 1.07 | 4.7 | 0.90 | 1.7 | 0.95 | 2.5 | 0.97 | 2.7 | 1.00 | 3.2 | | |
| 22 | 1.10 | 5.4 | 0.87 | 1.5 | 0.92 | 2.0 | 1.00 | 3.2 | 1.00 | 3.2 | | |
| 23 | 1.10 | 5.4 | 0.80 | 0.8 | 0.92 | 2.0 | 1.00 | 3.2 | 1.02 | 3.6 | | |
| 24 | 1.15 | 6.7 | 0.80 | 0.8 | 0.92 | 2.0 | 1.00 | 3.2 | 1.07 | 4.7 | | |
| 25 | 1.30 | 11.0 | 0.80 | 0.8 | 0.92 | 2.0 | 1.00 | 3.2 | 1.07 | 4.7 | | |
| 26 | 1.20 | 11.0 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.05 | 4.3 | | |
| 27 | 1.27 | 10.1 | 0.82 | 0.9 | 0.95 | 2.5 | 1.00 | 3.2 | 1.07 | 4.7 | | |
| 28 | 1.27 | 10.1 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.07 | 4.7 | | |
| 29 | 1.25 | 9.5 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.00 | 4.7 | | |
| 30 | 1.25 | 9.5 | 0.80 | 0.8 | 0.95 | 2.5 | 1.00 | 3.2 | 1.00 | 3.2 | | |
| 31 | 1.20 | 8.1 | 0.77 | 0.7 | | | 1.00 | 3.2 | | | | |

MONTHLY DISCHARGE of Heflley Creek (Lower) near mouth, for 1914.

(Drainage area, 65 square miles.)

| Month. | DISCHARGE IN SECOND FEET. | | |
|------------|---------------------------|---------|------|
| | Maximum. | Minimum | Mean |
| April | 18.4 | 4.3 | 11.1 |
| May | 54.5 | 11.0 | 29.3 |
| June | 13.3 | 4.3 | 8.4 |
| July | 11.0 | 1.7 | 5.0 |
| August | 11.0 | 0.7 | 5.7 |
| September | 2.5 | 0.7 | 1.5 |
| October | 3.2 | 2.5 | 2.8 |
| November | 4.7 | 1.7 | 3.4 |
| December | 4.7 | 4.3 | |
| The period | 34.5 | 0.7 | 8.4 |

NOTE.—The flow of Heflley creek at mouth is not the natural discharge, since several large diversions are made above this point, and the run off is regulated; also by a dam on Heflley lake.

Precipitation is low, varying probably from 10 to 15 inches per annum. There is probably some evaporation loss from Heflley lakes.

INGRAM CREEK (2020).

Location.—Section 23, township 17, range 13, west 6th meridian.

Records Available.—April 1 to October 4, 1911; April 1 to August 31, 1912; April 1 to September 16, 1913.

Drainage Area.—Twenty-five square miles.

Gauge.—The gauge is a vertical staff gauge read daily by Miss M. King during high water, and tri-weekly at low stages.

Channel.—Channel is straight at measuring section. Bed of stream is rocky and permanent, only one channel at all stages.

Discharge Measurements.—The curve is well defined, measurements having been taken at all stages.

Winter Flow.—Ice conditions usually exist during December, January and February.

Accuracy.—The general accuracy of results is considered high.

DISCHARGE MEASUREMENTS of Ingram Creek near Grand Prairie, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-----------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 6..... | E. M. Dann & E. H. Tredcroft..... | 1055 | 18 | 13.95 | 3.14 | 1.92 | 43.9 |
| June 23..... | C. B. Corbould..... | 1915 | 17 | 7.10 | 1.70 | 1.25 | 12.2 |
| July 23..... | do..... | 1915 | 8 | 4.90 | 0.65 | 1.00 | 3.2 |
| Sept. 24..... | do..... | 1915 | 7 | 2.80 | 0.40 | 0.88 | 1.1 |

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Ingram Creek near Grand Prairie,
for 1914.

| DAY. | May. | | June. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 1-50 | 22-0 |
| 2..... | | | 1-40 | 17-75 |
| 3..... | | | 1-50 | 22-0 |
| 4..... | | | 1-40 | 17-75 |
| 5..... | | | 1-40 | 17-75 |
| 6..... | 1-92 | 43-9 | 1-50 | 22-0 |
| 7..... | | | 1-40 | 17-75 |
| 8..... | | | 1-40 | 17-75 |
| 9..... | 2-20 | 61-2 | 1-35 | 15-75 |
| 10..... | 2-40 | 74-4 | 1-35 | 15-75 |
| 11..... | 2-30 | 67-6 | 1-40 | 17-75 |
| 12..... | 2-40 | 74-4 | 1-40 | 17-75 |
| 13..... | 2-30 | 67-6 | 1-30 | 13-75 |
| 14..... | 2-20 | 61-2 | 1-30 | 13-75 |
| 15..... | 2-40 | 74-4 | 1-25 | 11-8 |
| 16..... | 2-50 | 81-1 | 1-20 | 9-8 |
| 17..... | 2-45 | 77-7 | 1-20 | 9-8 |
| 18..... | 2-30 | 67-6 | 2-20 | 9-8 |
| 19..... | 2-10 | 54-7 | 1-20 | 9-8 |
| 20..... | 2-00 | 48-5 | 1-20 | 9-8 |
| 21..... | 1-90 | 42-5 | 1-20 | 9-8 |
| 22..... | 1-90 | 42-5 | 1-15 | 8-1 |
| 23..... | 1-90 | 42-5 | 1-20 | 9-8 |
| 24..... | 1-90 | 42-5 | 1-20 | 9-8 |
| 25..... | 1-90 | 42-5 | 1-20 | 9-8 |
| 26..... | 1-80 | 36-8 | 1-20 | 9-8 |
| 27..... | 1-80 | 36-8 | 1-20 | 9-8 |
| 28..... | 1-70 | 31-5 | 1-15 | 8-1 |
| 29..... | 1-65 | 29-0 | 1-10 | 6-4 |
| 30..... | 1-60 | 26-5 | 1-10 | 6-4 |
| 31..... | 1-55 | 24-2 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Ingram Creek near Grand Prairie,
for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | |
|------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 1-10 | 6-4 | 0-80 | 0-70 | | 1-1 | | 2-6 | 0-55 | 0-20 |
| 2. | 1-05 | 5-0 | | 0-9 | 0-85 | 1-1 | | 3-8 | | 0-20 |
| 3. | 1-05 | 5-0 | | 1-1 | | 0-95 | 1-05 | 5-0 | | 0-20 |
| 4. | 1-05 | 5-0 | | 1-3 | | 0-80 | 1-00 | 3-5 | 0-55 | 0-20 |
| 5. | 1-00 | 3-5 | 0-90 | 1-5 | 0-80 | 0-70 | | 3-2 | | 0-21 |
| 6. | 1-00 | 3-5 | | 1-3 | 0-80 | 0-70 | | 2-8 | | 0-23 |
| 7. | 1-00 | 3-5 | | 1-3 | | 1-30 | 0-95 | | 0-60 | 0-25 |
| 8. | 1-05 | 5-0 | 0-85 | 1-1 | | 1-90 | | 2-2 | 0-50 | 0-15 |
| 9. | 1-05 | 5-0 | 0-80 | 0-7 | 0-95 | 2-50 | | 1-9 | | 0-17 |
| 10. | 1-00 | 3-5 | | 0-7 | | 2-80 | 0-9 | 1-5 | | 0-19 |
| 11. | 1-05 | 5-0 | | 0-7 | | 3-1 | 0-9 | 1-5 | 0-55 | 0-20 |
| 12. | 1-10 | 6-4 | 0-80 | 0-7 | 1-0 | 3-5 | | 2-6 | | |
| 13. | 1-25 | 11-8 | | 1-0 | 1-0 | 3-5 | | 3-8 | | |
| 14. | 1-30 | 13-75 | | 1-2 | | 4-4 | 1-05 | 5-0 | | |
| 15. | 1-00 | 3-5 | 0-90 | 1-5 | | 5-4 | | 3-8 | | |
| 16. | 1-00 | 3-5 | 0-75 | 0-55 | 1-1 | 6-4 | | 2-6 | | |
| 17. | 1-05 | 5-0 | 0-75 | 0-55 | | 7-0 | | 1-4 | | |
| 18. | 1-00 | 3-5 | | 0-55 | | 7-5 | 0-60 | 0-25 | | |
| 19. | 1-00 | 3-5 | 0-75 | 0-55 | 1-15 | 8-1 | | 0-23 | | |
| 20. | 1-25 | 11-8 | | 0-75 | 1-00 | 3-5 | | 0-21 | | |
| 21. | 1-10 | 6-4 | | 0-95 | | 2-8 | 0-55 | 0-20 | | |
| 22. | 1-00 | 3-5 | 0-85 | 1-10 | | 2-0 | | 0-19 | | |
| 23. | 1-00 | 3-5 | 0-90 | 1-00 | 0-90 | 1-5 | | 0-17 | | |
| 24. | 1-00 | 3-5 | 0-80 | 0-70 | | 2-75 | 0-50 | 0-15 | | |
| 25. | 1-00 | 3-5 | | 0-70 | | 3-90 | 0-55 | 0-20 | | |
| 26. | 0-95 | 2-5 | 0-80 | 0-70 | 1-05 | 5-00 | | 0-20 | | |
| 27. | 0-95 | 2-5 | | 0-80 | 1-05 | 5-0 | | 0-20 | | |
| 28. | 0-90 | 1-5 | | 0-9 | | 3-9 | | 0-20 | | |
| 29. | 0-90 | 1-5 | 0-85 | 1-1 | | 2-7 | | 0-20 | | |
| 30. | 0-90 | 1-5 | 0-85 | 1-1 | 0-90 | 1-5 | | 0-20 | | |
| 31. | 0-85 | 1-1 | | 1-1 | | | 0-55 | 0-20 | | |

MONTHLY DISCHARGE of Ingram Creek near Grand Prairie, for 1914.

(Drainage area, 25 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-------------|---------------------------|----------|-------------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| May. | 81-1 | 24-2 | 52-1 | 2-08 | 2-40 | 3,203 |
| June | 22-0 | 6-4 | 13-2 | 0-53 | 0-59 | 785 |
| July | 13-7 | 1-1 | 4-6 | 0-18 | 0-21 | 285-9 |
| August | 1-5 | 0-55 | 0-92 | 0-04 | 0-05 | 57-1 |
| September | 8-1 | 0-7 | 3-2 | 0-13 | 0-14 | 190 |
| October | 5-0 | 0-15 | 1-7 | 0-07 | 0-08 | 104 |
| November | 0-25 | 0-20 | (for period | November | 1 to November | 11.) |
| December. | | | | | | |
| The period. | 81-1 | 0-15 | 12-6 | 0-50 | 3-47 | 4,625 |

NOTE.—Creek became frozen up on November 12, when water ceased running.
No precipitation records available.

SESSIONAL PAPER No. 25e

JAMIESON CREEK (2022).

Location.—Section 21, township 22, range 17, west of the 6th meridian.

Records Available.—June 22 to October 30, 1911; April 3 to October 30, 1912; May 1 to October 1, 1913; January 1 to January 24, and April 1 to December 9, 1914.

Drainage Area.—Sixty-six square miles.

Gauge.—Vertical staff gauge situated above British Columbia Fruitlands Division, and read daily by J. Crack, rancher.

Channel.—Is approximately 30 feet in width, with rocky bed.

Discharge Measurements.—Are made from Highway bridge at high water and by wading at low water.

Accuracy.—The accuracy of the returns are considered fairly high, having been compiled from a well-defined curve; meterings have been procured at all stages.

Winter Flow.—Ice conditions on this stream vary considerably. Some years obtaining for two months (January and February) and some years remaining open.

DISCHARGE MEASUREMENTS of Jamieson Creek near Black Pines, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 10 | E. H. Tredcroft | 1055 | 28 | 63.3 | 7.50 | 3.80 | 490 ¹ |
| " 25 | E. H. Tredcroft & C. Corbould | 1923 | 30 | 54.1 | 5.61 | 3.50 | 343 ¹ |
| June 30 | E. H. Tredcroft | 1923 | 35 | 34.0 | 1.90 | 2.36 | 65.5 |
| Aug. 5 | C. B. Corbould | 1915 | 24 | 39.6 | 0.60 | 2.00 | 26.0 |
| " 26 | E. H. Tredcroft & C. B. Corbould | 1923 | 20 | 18.4 | 0.46 | 1.81 | 8.6 |

¹ Measurements made at highway bridge and added to flow of div.
For further hydrographic data see Water Resources Papers Nos. 1 and 8

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Jamieson Creek near Black Pine,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-90 | 13-0 | | | | | 2-00 | 20 | 3-30 | 551 | 3-00 | 172 |
| 2 | 1-90 | 13-0 | | | | | 2-00 | 20 | 3-60 | 375 | 2-90 | 150 |
| 3 | 1-80 | 8-0 | | | | | 2-00 | 20 | 3-90 | 570 | 2-90 | 150 |
| 4 | 1-70 | 4-5 | | | | | 2-00 | 20 | 3-60 | 375 | 2-80 | 130 |
| 5 | 1-60 | 3-0 | | | | | 2-10 | 29 | 3-60 | 375 | 2-60 | 97 |
| 6 | 1-55 | 2-2 | | | | | 2-10 | 29 | 3-50 | 325 | 2-60 | 97 |
| 7 | 1-55 | 2-2 | | | | | 2-20 | 40 | 3-45 | 305 | 2-65 | 104 |
| 8 | 1-45 | 1-0 | | | | | 2-30 | 53 | 3-45 | 305 | 2-60 | 97 |
| 9 | 1-45 | 1-0 | | | | | 2-40 | 67 | 3-60 | 375 | 2-55 | 89 |
| 10 | 1-40 | 0-5 | | | | | 2-40 | 67 | 3-80 | 500 | 2-55 | 89 |
| 11 | 1-40 | 0-5 | | | | | 2-45 | 74 | 4-10 | 730 | 2-55 | 89 |
| 12 | 1-40 | 0-5 | | | | | 2-45 | 74 | 4-20 | 810 | 2-45 | 74 |
| 13 | 1-40 | 0-5 | | | | | 2-50 | 82 | 4-25 | 852 | 2-45 | 74 |
| 14 | 1-45 | 1-0 | | | | | 2-50 | 82 | 4-30 | 895 | 2-45 | 74 |
| 15 | 1-45 | 1-0 | | | | | 2-60 | 97 | 4-40 | 980 | 2-40 | 67 |
| 16 | 1-45 | 1-0 | | | | | 2-75 | 121 | 4-60 | 1,155 | 2-35 | 60 |
| 17 | 1-45 | 1-0 | | | | | 2-80 | 130 | 4-40 | 980 | 2-40 | 67 |
| 18 | 1-45 | 1-0 | | | | | 3-90 | 150 | 4-25 | 852 | 2-35 | 60 |
| 19 | 1-45 | 1-0 | | | | | 2-80 | 130 | 3-80 | 500 | 2-20 | 40 |
| 20 | 1-40 | 0-5 | | | | | 2-75 | 121 | 3-90 | 570 | 2-20 | 40 |
| 21 | 1-40 | 0-5 | | | | | 2-75 | 121 | 3-80 | 500 | 2-20 | 40 |
| 22 | 1-40 | 0-5 | | | | | 2-75 | 121 | 3-80 | 500 | 2-30 | 53 |
| 23 | 1-40 | 0-5 | | | | | 2-75 | 121 | 3-70 | 432 | 2-40 | 67 |
| 24 | 1-40 | 0-5 | | | | | 2-75 | 121 | 3-70 | 432 | 2-45 | 74 |
| 25 | 1-40 | 0-5 | | | | | 2-75 | 121 | 3-50 | 325 | 2-50 | 82 |
| 26 | | | | | | | 2-80 | 130 | 3-40 | 285 | 2-55 | 89 |
| 27 | | | | | | | 2-85 | 140 | 3-40 | 285 | 2-60 | 97 |
| 28 | | | | | | | 2-90 | 150 | 3-30 | 251 | 2-65 | 104 |
| 29 | | | | | | | 2-95 | 161 | 3-20 | 222 | 2-60 | 97 |
| 30 | | | | | | | 3-20 | 222 | 3-10 | 196 | 2-50 | 82 |
| 31 | | | | | | | | | 3-00 | 172 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Jamieson Creek near Black Pines, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-35 | 60 | 1-95 | 16 | 1-72 | 4-5 | 1-77 | 6-0 | 1-87 | 10-5 | 1-77 | 6-0 |
| 2 | 2-35 | 60 | 1-95 | 16 | 1-67 | 3-7 | 1-77 | 6-0 | 1-92 | 13-0 | 1-82 | 8-0 |
| 3 | 2-30 | 53 | 1-95 | 16 | 1-67 | 3-7 | 1-77 | 6-0 | 1-92 | 13-0 | 1-82 | 8-0 |
| 4 | 2-30 | 53 | 1-95 | 16 | 1-67 | 3-7 | 1-77 | 6-0 | 1-92 | 13-0 | 1-82 | 8-0 |
| 5 | 2-25 | 46 | 1-95 | 16 | 1-67 | 3-7 | 1-77 | 6-0 | 1-87 | 10-5 | 1-87 | 10-5 |
| 6 | 2-20 | 40 | 1-95 | 16 | 1-67 | 3-7 | 1-77 | 6-0 | 1-87 | 10-5 | 1-92 | 13-0 |
| 7 | 2-20 | 40 | 1-95 | 16 | 1-67 | 3-7 | 1-77 | 6-0 | 1-87 | 10-5 | 1-92 | 13-0 |
| 8 | 2-15 | 34 | 1-95 | 16 | 1-72 | 4-5 | 1-77 | 6-0 | 1-87 | 10-5 | 1-87 | 10-5 |
| 9 | 2-10 | 29 | 1-95 | 16 | 1-77 | 6-0 | 1-72 | 4-5 | 1-82 | 8-0 | 1-87 | 10-5 |
| 10 | 2-10 | 29 | 1-90 | 13 | 1-87 | 10-5 | 1-72 | 4-5 | 1-82 | 8-0 | | |
| 11 | 2-05 | 24 | 1-90 | 13 | 1-77 | 6-0 | 1-77 | 6-0 | 1-82 | 8-0 | | |
| 12 | 2-05 | 24 | 1-90 | 13 | 1-72 | 4-5 | 1-82 | 8-0 | 1-87 | 10-5 | | |
| 13 | 1-95 | 16 | 1-85 | 10 | 1-72 | 4-5 | 1-87 | 10-5 | 1-92 | 13-0 | | |
| 14 | 2-10 | 29 | 1-85 | 10 | 1-77 | 6-0 | 1-82 | 8-0 | 1-97 | 16-0 | | |
| 15 | 2-40 | 67 | 1-90 | 13 | 1-82 | 8-0 | 1-77 | 6-0 | 1-97 | 16-0 | | |
| 16 | 2-40 | 67 | 1-90 | 13 | 1-77 | 6-0 | 1-77 | 6-0 | 1-92 | 13-0 | | |
| 17 | 2-30 | 53 | 1-90 | 13 | 1-82 | 8-0 | 1-77 | 6-0 | 1-87 | 10-5 | | |
| 18 | 2-25 | 46 | 1-85 | 10 | 1-87 | 10-5 | 1-82 | 8-0 | 1-82 | 8-0 | | |
| 19 | 2-20 | 40 | 1-85 | 10 | 1-87 | 10-5 | 1-87 | 10-5 | 1-87 | 10-5 | | |
| 20 | 2-20 | 40 | 1-85 | 10 | 1-87 | 10-5 | 1-97 | 16-0 | 1-82 | 8-0 | | |
| 21 | 2-10 | 29 | 1-85 | 10 | 1-87 | 10-5 | 1-92 | 13-0 | 1-82 | 8-0 | | |
| 22 | 2-20 | 40 | 1-85 | 10 | 1-87 | 10-5 | 1-92 | 13-0 | 1-82 | 8-0 | | |
| 23 | 2-30 | 53 | 1-85 | 10 | 2-07 | 24-0 | 1-87 | 10-5 | 1-82 | 8-0 | | |
| 24 | 2-40 | 67 | 1-85 | 10 | 1-92 | 13-0 | 1-87 | 10-5 | 1-82 | 8-0 | | |
| 25 | 2-40 | 67 | 1-75 | 6 | 1-87 | 10-5 | 1-87 | 10-5 | 1-87 | 10-5 | | |
| 26 | 2-30 | 53 | 1-80 | 8 | 1-87 | 10-5 | 1-82 | 8-0 | 1-87 | 10-5 | | |
| 27 | 2-20 | 40 | 1-75 | 6 | 1-82 | 8-0 | 1-82 | 8-0 | 1-82 | 8-0 | | |
| 28 | 2-05 | 25 | 1-75 | 6 | 1-82 | 8-0 | 1-82 | 8-0 | 1-77 | 6-0 | | |
| 29 | 2-05 | 25 | 1-80 | 8 | 1-77 | 6-0 | 1-82 | 8-0 | 1-77 | 6-0 | | |
| 30 | 1-95 | 16 | 1-75 | 6 | 1-77 | 6-0 | 1-82 | 8-0 | 1-77 | 6-0 | | |
| 31 | 1-90 | 13 | 1-75 | 6 | | | 1-82 | 8-0 | | | | |

MONTHLY DISCHARGE of Jamieson Creek near Black Pines, for 1914.

(Drainage area, 66 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| April | 222 | 20 | 94 | 1-4 | 1-6 | 5,593 |
| May | 1,155 | 172 | 506 | 7-7 | 8-9 | 31,113 |
| June | 172 | 40 | 87 | 1-3 | 1-4 | 5,176 |
| July | 67 | 13 | 41 | 6-6 | 0-7 | 2,521 |
| August | 16 | 6 | 11 | 0-2 | 0-3 | 676 |
| September | 24 | 3-7 | 7 | 0-1 | 0-1 | 416 |
| October | 16 | 4-5 | 8 | 0-1 | 0-1 | 492 |
| November | 16 | 6-0 | 10 | 0-2 | 0-2 | 595 |
| The period | 1,155 | 3-7 | 95 | 1-45 | 13-3 | 46,582 |

NOTE—Summary given under "the period" covers only the months of April to November inclusive. Precipitation probably varies from about 10 inches at the mouth to 30 inches in the higher altitudes.

LOUIS CREEK (2023).

Location.—Section 33, township 23, range 15, west 6th meridian.

Records Available.—July 16 to October 31, 1911; April 1 to November 16, 1912; May 1 to October 14, 1913; April 1 to December 11, 1914.

Drainage Area.—One hundred square miles.

Gauge.—Standard vertical staff gauge read daily during high water, and tri-weekly during low water, by D. G. McKnight.

Channel.—The width of stream averages 25 to 35 feet at measuring section. Control is good.

Discharge Measurements.—Nine well-distributed meterings have been taken on this stream, and curve is well defined.

Winter Flow.—Ice conditions obtain on this stream usually throughout January, February and March.

Accuracy.—Accuracy of returns on the whole is high, and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Louis Creek at Les ic's Ranch, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Aug. 13 | C. B. Corbould..... | 1,915 | 21.0 | 27.3 | 1.0 | 0.59 | 28.0 |

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Louis Creek at Leslie's Ranch, for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1-45 | 89 | 2-50 | 230 |
| 2 | 0-55 | 26 | 1-80 | 130 | 2-80 | 278 |
| 3 | | | 2-05 | 165 | 3-10 | 326 |
| 4 | 0-55 | 26 | 1-90 | 144 | 2-90 | 294 |
| 5 | | | 1-80 | 130 | 2-60 | 246 |
| 6 | 0-65 | 30 | 1-75 | 123 | 2-40 | 215 |
| 7 | | | 1-70 | 117 | 2-45 | 222 |
| 8 | | | 1-75 | 123 | 2-35 | 207 |
| 9 | | | 1-90 | 144 | 2-30 | 200 |
| 10 | 0-75 | 35 | 2-20 | 186 | 2-55 | 238 |
| 11 | | | 2-30 | 200 | 2-90 | 294 |
| 12 | | | 2-45 | 222 | 2-95 | 302 |
| 13 | 0-85 | 40 | 2-50 | 230 | 2-80 | 278 |
| 14 | | | 3-10 | 326 | 2-80 | 278 |
| 15 | | | 3-55 | 398 | 2-85 | 286 |
| 16 | | | 3-55 | 398 | 2-90 | 294 |
| 17 | 1-10 | 57 | 3-30 | 358 | 2-90 | 294 |
| 18 | | | 3-05 | 318 | 2-70 | 262 |
| 19 | | | 2-90 | 294 | 2-50 | 230 |
| 20 | 1-05 | 53 | 2-75 | 270 | 2-50 | 230 |
| 21 | | | 2-75 | 270 | 2-10 | 172 |
| 22 | | | 2-85 | 286 | 1-95 | 151 |
| 23 | | | 3-00 | 310 | 2-05 | 165 |
| 24 | 1-10 | 57 | 3-20 | 342 | 2-00 | 158 |
| 25 | | | 3-15 | 334 | 2-15 | 179 |
| 26 | | | 2-85 | 286 | 2-05 | 165 |
| 27 | 1-15 | 61 | 2-40 | 215 | 1-95 | 151 |
| 28 | | | 2-40 | 215 | 1-85 | 137 |
| 29 | | | 2-30 | 200 | 2-05 | 165 |
| 30 | | | 2-20 | 186 | 1-80 | 130 |
| 31 | | | 2-30 | 200 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Louis Creek at Leslie's Ranch, for 1914.—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-70 | 117 | | | | | | | | | | |
| 2 | 1-60 | 105 | | | | | 0-55 | 26 | 0-70 | 32 | | |
| 3 | 1-50 | 94 | 0-60 | 28 | | | | | | | | |
| 4 | 1-45 | 89 | | | 0-45 | 22 | | | | | 0-50 | 24 |
| 5 | 1-30 | 74 | | | | | 0-50 | 24 | | | | |
| 6 | 1-25 | 69 | | | | | | | 0-60 | 28 | | |
| 7 | | | 0-60 | 28 | 0-40 | 20 | | | | | 0-50 | 24 |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | 0-50 | 24 | 0-55 | 26 | | |
| 10 | 1-05 | 53 | 0-65 | 30 | | | | | | | | |
| 11 | | | | | 0-50 | 24 | | | | | 0-50 | 24 |
| 12 | | | | | | | 0-50 | 24 | | | | |
| 13 | 0-90 | 43 | | | | | | | 0-55 | 26 | | |
| 14 | | | 0-55 | 26 | 0-50 | 24 | | | | | | |
| 15 | 1-40 | 84 | | | | | | | | | | |
| 16 | | | | | | | 0-50 | 24 | 0-55 | 26 | | |
| 17 | 1-10 | 57 | 0-55 | 26 | | | | | | | | |
| 18 | | | | | 0-55 | 26 | | | | | | |
| 19 | | | | | | | 0-60 | 28 | | | | |
| 20 | | | | | | | | | | | | |
| 21 | | | 0-50 | 24 | 0-55 | 26 | | | 0-50 | 24 | | |
| 22 | 0-90 | 43 | | | | | | | | | | |
| 23 | | | | | | | 0-55 | 26 | | | | |
| 24 | | | 0-50 | 24 | | | | | 0-50 | 24 | | |
| 25 | 0-80 | 37 | | | 0-50 | 24 | | | | | | |
| 26 | | | | | | | 0-50 | 24 | | | | |
| 27 | | | | | | | | | | | | |
| 28 | | | 0-45 | 22 | 0-60 | 28 | | | 0-50 | 24 | | |
| 29 | 0-70 | 32 | | | | | | | | | | |
| 30 | | | | | | | 0-50 | 24 | 0-50 | 24 | | |
| 31 | 0-65 | 30 | 0-45 | 22 | | | | | | | | |

MONTHLY DISCHARGE of Louis Creek near mouth, for 1914.

(Drainage area, 100 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 61 | 26 | 43-0 | 0-4 | 0-4 | 2,559 |
| May | 398 | 89 | 233-0 | 2-3 | 2-6 | 14,327 |
| June | 326 | 130 | 225-9 | 2-2 | 2-4 | 13,442 |
| July | 117 | 30 | 66-2 | 0-7 | 0-8 | 4,070 |
| August | 30 | 22 | 25-5 | 0-2 | 0-2 | 1,568 |
| September | 28 | 20 | 24-2 | 0-2 | 0-2 | 1,440 |
| October | 28 | 24 | 24-9 | 0-2 | 0-2 | 1,531 |
| November | 32 | 24 | 26-0 | 0-3 | 0-3 | 1,547 |
| December | | | | | | |
| The period | 398 | 20 | 83-6 | 0-8 | 7-1 | 50,484 |

NOTE.—No precipitation data available, but it is probable that it has an annual variation from 15 to 20 inches. Ice conditions existed subsequent to December 11.

SESSIONAL PAPER No. 25e

MONTE CREEK, DIV. TO SUMMIT LAKE (2026).

Location.—At Graham's ranch.*Records Available.*—May 25 to October 2, 1911; June 20 to September 30, 1913; April 1 to November 17, 1914.*Gauge.*—Vertical staff gauge read daily by E. C. Lewis.*Channel.*—About 10 feet in width, with gravelly bed. This diversion supplements the natural run-off of Summit lake (or Essell creek).*Discharge Measurements.*—Gauge height discharge curve, only fairly well defined by three meterings in 1914.*Winter Flow.*—Stream frozen up during the winter months.*Accuracy.*—Fairly good, within about 10 per cent of true accuracy.DISCHARGE MEASUREMENTS of Monte Creek Diversion to Summit Lake,
for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--|--------------|--------|---------------------|-------------------|------------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 7..... | E. M. Dann & E. H. Tred- croft..... | 1,055 | 9.0 | 7.35 | 3.15 | 1.19 | 24.7 |
| June 22..... | C. B. Corbould..... | 1,915 | 8.0 | 5.00 | 2.24 | 1.00 | 11.2 ¹ |
| July 22..... | do..... | 1,915 | 3.5 | 0.90 | 0.63 | 0.20 | 0.6 |
| Sept. 23..... | do..... | | | | | 0.10 | 0.2 ² |

¹New gauge installed on this date. Old gauge reading 0.65.²Estimated.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek Diversion to Summit Lake, for 1914.

Up to June 22nd: old gauge used.

| DAY. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-55 | 3-1 | 1-20 | 25-1 | ..... | 11-0 |
| 2 | 0-55 | 3-1 | 1-40 | 35-9 | ..... | 11-0 |
| 3 | 0-62 | 4-3 | 1-50 | 41-6 | ..... | 11-0 |
| 4 | 0-72 | 6-5 | 1-40 | 35-9 | ..... | 11-0 |
| 5 | 0-80 | 8-7 | 1-30 | 30-4 | ..... | 11-0 |
| 6 | 0-92 | 12-7 | 1-30 | 30-4 | ..... | 11-0 |
| 7 | 1-00 | 15-9 | 1-20 | 25-1 | ..... | 11-0 |
| 8 | 1-10 | 20-1 | 1-20 | 25-1 | ..... | 11-0 |
| 9 | 1-25 | 27-7 | 1-30 | 30-4 | ..... | 11-0 |
| 10 | 1-30 | 30-4 | 1-40 | 35-9 | ..... | 11-0 |
| 11 | 1-35 | 33-1 | 1-40 | 35-9 | ..... | 11-0 |
| 12 | 1-40 | 35-9 | 1-30 | 30-4 | ..... | 11-0 |
| 13 | 1-45 | 38-7 | 1-10 | 20-1 | ..... | 11-0 |
| 14 | 1-50 | 41-6 | 1-20 | 25-1 | ..... | 11-0 |
| 15 | 1-50 | 41-6 | 1-20 | 25-1 | ..... | 11-0 |
| 16 | 1-50 | 41-6 | 1-00 | 15-9 | ..... | 11-0 |
| 17 | 1-50 | 41-6 | 0-90 | 12-0 | ..... | 11-0 |
| 18 | 1-50 | 41-6 | 0-90 | 12-0 | ..... | 11-0 |
| 19 | 1-50 | 41-6 | 0-90 | 12-0 | ..... | 11-0 |
| 20 | 1-50 | 41-6 | ..... | 11-0 | ..... | 11-0 |
| 21 | 1-50 | 41-6 | ..... | 11-0 | ..... | 11-0 |
| 22 | 1-50 | 41-6 | ..... | 11-0 | 1-00 | 11-0 |
| 23 | 1-50 | 41-6 | ..... | 11-0 | 1-00 | 11-0 |
| 24 | 1-40 | 35-9 | ..... | 11-0 | 1-05 | 12-4 |
| 25 | 1-40 | 35-9 | ..... | 11-0 | 1-10 | 13-7 |
| 26 | 1-30 | 30-4 | ..... | 11-0 | 1-05 | 12-4 |
| 27 | 1-20 | 25-1 | ..... | 11-0 | 1-00 | 11-0 |
| 28 | 1-20 | 25-1 | ..... | 11-0 | 1-00 | 11-0 |
| 29 | 1-20 | 25-1 | ..... | 11-0 | 1-00 | 11-0 |
| 30 | 1-20 | 25-1 | ..... | 11-0 | 1-00 | 11-0 |
| 31 | ..... | ..... | ..... | 11-0 | ..... | ..... |

SESSIONAL PAPER No. 25c

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek River Div. to Summit Lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-90 | 8-8 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 2 | 0-90 | 8-8 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 3 | 0-90 | 8-8 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 4 | 0-80 | 6-8 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 5 | 0-80 | 6-8 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 6 | 0-80 | 6-8 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 7 | 0-80 | 6-8 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 8 | 0-70 | 5-2 | 0-20 | 0-7 | 0-05 | 0-1 | 0-1 | 0-3 | 0-3 | 1-2 |
| 9 | 0-70 | 5-2 | 0-20 | 0-7 | 0-05 | 0-1 | 0-15 | 0-5 | 0-3 | 1-2 |
| 10 | 0-70 | 5-2 | 0-10 | 0-3 | 0-05 | 0-1 | 0-2 | 0-7 | 0-3 | 1-2 |
| 11 | 0-60 | 3-9 | 0-10 | 0-3 | 0-05 | 0-1 | 0-2 | 0-7 | 0-3 | 1-2 |
| 12 | 0-50 | 2-8 | 0-10 | 0-3 | 0-05 | 0-1 | 0-2 | 0-7 | 0-3 | 1-2 |
| 13 | 0-30 | 1-2 | 0-10 | 0-3 | 0-05 | 0-1 | 0-2 | 0-7 | 0-2 | 0-7 |
| 14 | 0-30 | 1-2 | 0-10 | 0-3 | 0-05 | 0-1 | 0-2 | 0-7 | 0-2 | 0-7 |
| 15 | 0-20 | 0-7 | 0-10 | 0-3 | 0-05 | 0-1 | 0-2 | 0-7 | 0-2 | 0-7 |
| 16 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-2 | 0-7 | 0-2 | 0-7 |
| 17 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-2 | 0-7 | 0-3 | 1-2 |
| 18 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-2 | 0-7 | | |
| 19 | 0-20 | 0-7 | 0-10 | 0-3 | 0-22 | 0-8 | 0-2 | 0-7 | | |
| 20 | 0-20 | 0-7 | 0-10 | 0-3 | 0-20 | 0-7 | 0-3 | 1-2 | | |
| 21 | 0-30 | 1-2 | 0-10 | 0-3 | 0-20 | 0-7 | 0-3 | 1-2 | | |
| 22 | 0-20 | 0-7 | 0-10 | 0-3 | 0-1C | 0-3 | 0-3 | 1-2 | | |
| 23 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-5 | 2-8 | | |
| 24 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-2 | 0-7 | | |
| 25 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-2 | 0-7 | | |
| 26 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-2 | 0-7 | | |
| 27 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-2 | 0-7 | | |
| 28 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-3 | 1-2 | | |
| 29 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-3 | 1-2 | | |
| 30 | 0-20 | 0-7 | 0-10 | 0-3 | 0-10 | 0-3 | 0-3 | 1-2 | | |
| 31 | 0-20 | 0-7 | 0-10 | 0-3 | | | 0-3 | 1-2 | | |

MONTHLY DISCHARGE of Monte Creek Div. to Summit Lake, for 1914.

(Drainage area, — square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | RUN-OFF. |
|------------|---------------------------|----------|----------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Total in acre-feet |
| April | 41-6 | 3-1 | 28-6 | 1 792 |
| May | 43-6 | 11-0 | 20-5 | 1 260 |
| June | 13-7 | 11-0 | 11-2 | 666 |
| July | 8-8 | 0-7 | 2-9 | 178 |
| August | 6-7 | 0-3 | 1-4 | 25 |
| September | 0-8 | 0-1 | 0-2 | 12 |
| October | 2-8 | 0-3 | 0-7 | 43 |
| November | 1-2 | 0-7 | For period Nov 16 | Nov 1 to |
| The period | 41-6 | 0-1 | 9-2 | 3 886 |

NOTE.—This diversion carries Monte Creek water to Summit lake, where it is stored—being used, when needed, upon lands in the Salmon river valley, near Grand Prairie.

MONTE CREEK, BELOW DIV. TO SUMMIT LAKE (2025).

Location.—Section 22, township 13, range 14, west 6th meridian.

Records Available.—May 25 to September 30, 1911; April 1 to September 17, 1912; June 20 to September 30, 1913; April 1 to November 17, 1914.

Drainage Area.—Forty-five square miles.

Gauge.—Standard vertical gauge read daily by E. C. Lewis.

Channel.—Width of channel averages 10 feet. Bed of stream gravelly and permanent.

Discharge Measurements.—The curve is well defined, with measurements taken at varying stages.

Winter Flow.—Ice conditions generally prevail throughout winter months.

Accuracy.—Accuracy on the whole is fairly high, and is probably within 10 per cent.

DISCHARGE MEASUREMENTS of Monte Creek below Summit Lake Div.
for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 22..... | C. B. Corbould..... | 1915 | 13 | 8.7 | 0.54 | 4.00 | 4.7 |
| July 22..... | do | 1915 | 12 | 7.5 | 0.41 | 3.93 | 3.11 |
| Sept. 23..... | do | 1915 | 11 | 5.8 | 0.15 | 3.83 | 0.90 |

For further hydrographic data see Water Resources Paper Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek below Div. Summit Lake, for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|-----------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 3.8 | 1.9 | 4.6 | 59.0 | 4.3 | 20.7 |
| 2 | 3.82 | 2.0 | 4.7 | 73.3 | 4.3 | 20.7 |
| 3 | 3.9 | 2.7 | 4.8 | 90.4 | 4.3 | 20.7 |
| 4 | 3.97 | 4.1 | 4.6 | 59.0 | 4.3 | 20.7 |
| 5 | 4.05 | 6.4 | 4.7 | 73.3 | 4.3 | 20.7 |
| 6 | 4.1 | 8.0 | 4.6 | 59.0 | 4.25 | 16.8 |
| 7 | 4.1 | 8.0 | 4.5 | 44.5 | 4.2 | 13.0 |
| 8 | 4.12 | 9.0 | 4.5 | 44.5 | 4.2 | 13.0 |
| 9 | 4.1 | 8.0 | 4.7 | 73.3 | 4.2 | 13.0 |
| 10 | 4.12 | 9.00 | 4.9 | 107.4 | 4.3 | 20.7 |
| 11 | 4.2 | 13.0 | 5.0 | 125.5 | 4.3 | 20.7 |
| 12 | 4.2 | 13.0 | 5.0 | 125.5 | 4.4 | 31.5 |
| 13 | 4.3 | 20.7 | 4.7 | 73.3 | 4.35 | 26.0 |
| 14 | 4.25 | 16.8 | 4.6 | 59.0 | 4.3 | 20.7 |
| 15 | 4.2 | 13.0 | 4.7 | 73.3 | 4.3 | 20.7 |
| 16 | 4.2 | 13.0 | 4.85 | 98.5 | 4.3 | 20.7 |
| 17 | 4.1 | 8.0 | 4.8 | 90.4 | 4.2 | 13.0 |
| 18 | 4.07 | 6.9 | 4.7 | 73.3 | 4.2 | 13.0 |
| 19 | 4.0 | 4.7 | 4.6 | 59.0 | 4.2 | 13.0 |
| 20 | 4.1 | 8.0 | 4.6 | 59.0 | 4.15 | 10.5 |
| 21 | 4.1 | 8.0 | 4.55 | 51.7 | 4.1 | 8.0 |
| 22 | 4.02 | 5.3 | 4.50 | 44.5 | 4.05 | 6.4 |
| 23 | 4.0 | 4.8 | 4.5 | 44.5 | 4.0 | 4.7 |
| 24 | 4.0 | 4.8 | 4.5 | 44.5 | 4.0 | 4.7 |
| 25 | 4.0 | 4.8 | 4.47 | 40.5 | 4.1 | 8.0 |
| 26 | 4.1 | 8.0 | 4.4 | 31.5 | 4.05 | 6.4 |
| 27 | 4.2 | 13.0 | 4.4 | 31.5 | 4.0 | 4.7 |
| 28 | 4.2 | 13.0 | 4.4 | 31.5 | 3.9 | 2.7 |
| 29 | 4.35 | 26.0 | 4.4 | 31.5 | 4.0 | 4.7 |
| 30 | 4.5 | 41.5 | 4.35 | 26.0 | 4.0 | 4.7 |
| 31 | | | 4.3 | 20.7 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek below Div. to Summit Lake, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 4-0 | 4-7 | 3-8 | 1-9 | 3-7 | 1-5 | 3-9 | 2-7 | 4-1 | 8-0 |
| 2 | 4-0 | 4-7 | 3-8 | 1-9 | 3-7 | 1-5 | 3-9 | 2-7 | 4-9 | 4-75 |
| 3 | 4-0 | 4-7 | 3-8 | 1-9 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-75 |
| 4 | 4-0 | 4-7 | 3-8 | 1-9 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-75 |
| 5 | 4-0 | 4-7 | 3-8 | 1-9 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-75 |
| 6 | 3-9 | 2-7 | 3-8 | 1-9 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-75 |
| 7 | 3-9 | 2-7 | 3-8 | 1-9 | 3-8 | 1-9 | 3-9 | 2-7 | 4-0 | 4-75 |
| 8 | 4-0 | 4-7 | 3-8 | 1-9 | 3-8 | 1-9 | 3-9 | 2-7 | 4-0 | 4-75 |
| 9 | 4-0 | 4-7 | 3-8 | 1-9 | 3-8 | 1-9 | 4-0 | 4-7 | 4-0 | 4-75 |
| 10 | 4-0 | 4-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-0 | 4-7 | 4-0 | 4-75 |
| 11 | 3-9 | 2-7 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-7 | 4-0 | 4-75 |
| 12 | 3-85 | 2-3 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-7 | 3-9 | 2-7 |
| 13 | 3-8 | 1-9 | 3-8 | 1-9 | 3-9 | 2-7 | 4-0 | 4-7 | 3-9 | 2-7 |
| 14 | 4-0 | 4-7 | 3-8 | 1-9 | 3-9 | 2-7 | 4-0 | 4-7 | 3-95 | 3-7 |
| 15 | 4-0 | 4-7 | 3-8 | 1-9 | 3-9 | 2-7 | 4-0 | 4-7 | 4-0 | 4-75 |
| 16 | 4-0 | 4-7 | 3-8 | 1-9 | 3-9 | 2-7 | 4-05 | 6-4 | | |
| 17 | 4-0 | 4-7 | 3-8 | 1-9 | 3-9 | 2-7 | 4-1 | 8-0 | | |
| 18 | 3-9 | 2-7 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-7 | | |
| 19 | 3-9 | 2-7 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-7 | | |
| 20 | 4-0 | 4-7 | 3-7 | 1-5 | 3-9 | 2-7 | 4-0 | 4-7 | | |
| 21 | 3-95 | 3-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-0 | 4-7 | | |
| 22 | 3-9 | 2-7 | 3-7 | 1-5 | 3-8 | 1-9 | 3-9 | 2-7 | | |
| 23 | 3-9 | 2-7 | 3-8 | 1-9 | 3-8 | 1-9 | 3-85 | 2-3 | | |
| 24 | 3-9 | 2-7 | 3-75 | 1-7 | 3-8 | 1-9 | 4-0 | 4-7 | | |
| 25 | 3-9 | 2-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-1 | 8-0 | | |
| 26 | 3-9 | 2-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-1 | 8-0 | | |
| 27 | 3-9 | 2-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-05 | 6-4 | | |
| 28 | 3-9 | 2-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-0 | 4-7 | | |
| 29 | 3-9 | 2-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-0 | 4-7 | | |
| 30 | 3-9 | 2-7 | 3-7 | 1-5 | 3-8 | 1-9 | 4-1 | 8-0 | | |
| 31 | 3-8 | 1-9 | 3-7 | 1-5 | | | 4-1 | 8-0 | | |

MONTHLY DISCHARGE of Monte Creek below Summit Lake Div., for 1914.

(Drainage area, 45 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | |
|-----------|---------------------------|----------|-------|
| | Maximum. | Minimum. | Mean. |
| April | 44-5 | 1-9 | 10-3 |
| May | 125-5 | 26-7 | 61-9 |
| June | 31-5 | 2-7 | 14-2 |
| July | 4-7 | 1-9 | 3-5 |
| August | 1-9 | 1-5 | 1-7 |
| September | 2-7 | 1-5 | 2-1 |
| October | 8-0 | 2-3 | 4-7 |
| November | 8-0 | 2-7 | |
| December | | | |
| The year | 125-5 | 1-5 | 14-0 |

NOTE.—The run-off is not a function of the drainage area since a large diversion is made above this station which carries water to Summit lake. During April to November, 1914, 3,886 acre-feet were so diverted.
Rainfall probably varies to a maximum of 20 inches annually.

SESSIONAL PAPER No. 25e

MONTE CREEK, ABOVE BOSTOCK'S DIVERSION (2024).

Location.—Section 25, township 19, range 15, west 6th meridian.

Records Available.—May 20 to June 30, 1911; August 8, 1911; April 8 to September 7, 1912; April 16 to September 13, 1913; April 1 to December 4, 1914.

Drainage Area.—One hundred and ten square miles.

Gauge.—Standard vertical gauge read semi-weekly by T. F. Teagle.

Channel.—About 15 feet wide, with rocky bed. Flow varies from zero to about 100 cubic feet per second.

Discharge Measurements.—Gauge-height discharge curve is very well defined.

Winter Flow.—Ice conditions prevail during December, January and February.

Accuracy.—High. Results computed from a well-rated curve.

DISCHARGE MEASUREMENTS of Monte Creek above Bostock's Diversion, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|----------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 7..... | E. H. Tredcroft..... | 1055 | 22 | 28.4 | 1.71 | 1.70 | 48.6 |
| June 21..... | C. B. Corbould..... | 1915 | 10 | 11.4 | 0.54 | 0.90 | 6.2 |
| July 21..... | do..... | 1915 | 8 | 7.6 | 0.32 | 0.70 | 2.5 |
| Sept. 22..... | do..... | 1915 | 7 | 2.9 | 0.66 | 0.59 | 1.9 |

For further hydrographic data see Water Resources Paper Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek above Bostock's
Diversion, for 1914.

| DAY. | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 0-99 | 8-6 | ..... | 37-1 | ..... | 20-0 |
| 2..... | ..... | 8-7 | 1-59 | 40-3 | ..... | 13-7 |
| 3..... | ..... | 8-8 | ..... | 44-0 | 1-22 | 17-4 |
| 4..... | 1-00 | 8-9 | ..... | 47-8 | ..... | 17-9 |
| 5..... | ..... | 10-2 | ..... | 51-5 | ..... | 18-4 |
| 6..... | ..... | 11-5 | 1-78 | 55-3 | 1-25 | 18-9 |
| 7..... | ..... | 12-8 | ..... | 50-8 | ..... | 17-2 |
| 8..... | 1-14 | 14-0 | ..... | 46-3 | ..... | 15-6 |
| 9..... | ..... | 15-6 | 1-61 | 41-8 | ..... | 14-0 |
| 10..... | ..... | 17-2 | ..... | 50-1 | 1-10 | 12-3 |
| 11..... | 1-25 | 18-9 | ..... | 58-4 | ..... | 12-6 |
| 12..... | ..... | 21-0 | ..... | 66-7 | ..... | 12-9 |
| 13..... | ..... | 23-1 | 1-97 | 75-0 | 1-12 | 13-1 |
| 14..... | ..... | 25-2 | ..... | 71-2 | ..... | 12-4 |
| 15..... | 1-40 | 27-3 | ..... | 67-5 | ..... | 11-8 |
| 16..... | ..... | 28-0 | 1-87 | 63-8 | ..... | 11-2 |
| 17..... | ..... | 28-6 | ..... | 59-7 | 1-05 | 10-6 |
| 18..... | 1-43 | 29-2 | ..... | 55-5 | ..... | 10-0 |
| 19..... | ..... | 28-8 | ..... | 51-3 | ..... | 9-4 |
| 20..... | ..... | 28-5 | 1-68 | 47-1 | 1-00 | 8-9 |
| 21..... | ..... | 28-2 | ..... | 42-8 | ..... | 8-3 |
| 22..... | ..... | 27-9 | ..... | 38-6 | ..... | 7-7 |
| 23..... | 1-41 | 27-3 | 1-51 | 34-4 | ..... | 7-1 |
| 24..... | ..... | 26-7 | ..... | 34-6 | 0-91 | 6-5 |
| 25..... | 1-38 | 26-1 | ..... | 34-7 | ..... | 6-2 |
| 26..... | ..... | 27-2 | ..... | 34-8 | ..... | 5-9 |
| 27..... | ..... | 28-3 | ..... | 35-0 | 0-87 | 5-6 |
| 28..... | ..... | 29-4 | 1-52 | 35-2 | ..... | 5-3 |
| 29..... | 1-45 | 30-5 | ..... | 30-6 | ..... | 4-9 |
| 30..... | ..... | 33-8 | ..... | 26-0 | ..... | 4-5 |
| 31..... | ..... | ..... | 1-30 | 21-3 | ..... | ..... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0.80 | 4.2 | 0.60 | 1.8 | | 0.3 | 1.4 | | 2.7 | 0.70 | 2.8 | 2.8 |
| 2 | | 4.1 | | 1.8 | 0.40 | 0.2 | 1.5 | | 2.7 | | | 2.0 |
| 3 | | 3.9 | | 1.7 | | 0.4 | 0.57 | 1.5 | | 2.6 | | 3.0 |
| 4 | 0.77 | 3.8 | | 1.6 | | 0.6 | | 1.5 | 0.67 | 2.5 | 0.72 | 3.1 |
| 5 | | 3.5 | 0.57 | 1.5 | 0.50 | 0.8 | | 1.6 | | 2.6 | | |
| 6 | | 3.3 | | 1.5 | | 0.8 | | 1.7 | | 2.7 | | |
| 7 | | 3.0 | | 1.6 | | 0.8 | 0.60 | 1.8 | 0.70 | 2.8 | | |
| 8 | 0.70 | 2.8 | | 1.7 | | 0.9 | | 1.8 | | 2.8 | | |
| 9 | | 2.8 | 0.60 | 1.8 | 0.51 | 0.9 | | 1.9 | | 2.8 | | |
| 10 | | 2.8 | | 1.7 | | 0.9 | 0.62 | 2.0 | | 2.8 | | |
| 11 | 0.70 | 2.8 | | 1.5 | | 0.8 | | 2.0 | 0.70 | 2.8 | | |
| 12 | | 3.1 | 0.55 | 1.3 | 0.50 | 0.8 | | 2.0 | | 2.7 | | |
| 13 | | 3.5 | | 1.2 | | 1.0 | | 2.0 | | 2.6 | | |
| 14 | | 3.9 | | 1.0 | | 1.1 | 0.62 | 2.0 | 0.67 | 2.5 | | |
| 15 | 0.80 | 4.2 | 0.50 | 0.8 | | 1.2 | | 2.2 | | 2.5 | | |
| 16 | | 4.0 | | 0.8 | 0.55 | 1.3 | | 2.4 | | 2.6 | | |
| 17 | | 3.9 | | 0.8 | | 1.3 | 0.67 | 2.5 | | 2.7 | | |
| 18 | 0.77 | 3.8 | | 0.8 | | 1.3 | | 2.5 | 0.70 | 2.8 | | |
| 19 | | 3.6 | 0.50 | 0.8 | 0.55 | 1.3 | | 2.4 | | 2.7 | | |
| 20 | | 3.3 | | 0.8 | | 1.3 | | 2.3 | | 2.6 | | |
| 21 | | 3.0 | | 0.8 | | 1.3 | 0.65 | 2.3 | 0.67 | 2.5 | | |
| 22 | 0.70 | 2.8 | 0.50 | 0.8 | | 1.3 | | 2.3 | | 2.8 | | |
| 23 | | 2.7 | | 0.8 | 0.55 | 1.3 | | 2.4 | | 3.2 | | |
| 24 | | 2.5 | | 0.7 | | 1.3 | 0.67 | 2.5 | | 3.5 | | |
| 25 | 0.65 | 2.3 | | 0.6 | | 1.4 | | 2.5 | 0.77 | 3.8 | | |
| 26 | | 2.1 | 0.45 | 0.5 | 0.57 | 1.5 | | 2.5 | | 3.5 | | |
| 27 | | 2.0 | | 0.5 | | 1.4 | | 2.5 | | 3.1 | | |
| 28 | | 1.9 | | 0.5 | | 1.4 | 0.67 | 2.5 | 0.70 | 2.8 | | |
| 29 | 0.60 | 1.8 | 0.45 | 0.5 | | 1.3 | | 2.6 | | 2.8 | | |
| 30 | | 1.8 | | 0.5 | 0.55 | 1.3 | | 2.7 | | 2.8 | | |
| 31 | | 1.8 | | 0.4 | | | 0.70 | 2.8 | | | | |

MONTHLY DISCHARGE of Monte Creek above Bostock's Diversion, for 1914.

(Drainage area, 110 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | |
|------------|---------------------------|----------|-------|
| | Maximum. | Minimum. | Mean. |
| April | 33.8 | 8.6 | 22.0 |
| May | 75.0 | 21.3 | 46.7 |
| June | 20.0 | 4.5 | 11.5 |
| July | 4.2 | 1.8 | 3.1 |
| August | 1.8 | 0.4 | 1.1 |
| September | 1.5 | 0.2 | 1.0 |
| October | 2.8 | 1.4 | 2.1 |
| November | 3.8 | 2.5 | 2.8 |
| December | | | |
| The period | 75.0 | 0.2 | 11.3 |

NOTE.—Summary for "the period" covers April to November (inclusive).

The run-off (not given in table) is not a direct function of the drainage area, since there is a large diversion from Monte Creek to Summit Lake.

Rainfall varies from 10 to 20 inches annually.

MYRTLE RIVER.

The Myrtle river rises in Myrtle lake just a mile west of the Blue River divide. Myrtle lake is surrounded by fairly level country, and is at an elevation of about 3,000 feet. Its superficial area is about 15 square miles. No information has been obtained regarding the storage facilities of the lake; however, it is interesting to note that with the area given above, a 5-foot dam



Myrtle River, Dawson Falls

Photograph by F. R. Archibald

One of the many natural power sites on the Myrtle river. This photograph, taken at a low water stage shows Dawson falls, which are about four miles upstream from Helmcken Falls.

would give an increased storage capacity of 48,000 acre-feet (at least), which would mean an increase in minimum flow for continuous power of about 80 second-feet (assuming a shortage of water for 300 days). The wonderful latent power possibilities of the river warrant a much more thorough investigation.

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The following are the more important power sites:—

| Name of Falls. | Natural Head. | Distance from mouth of Myrtle River and Location. |
|----------------------|--|---|
| Helmcken falls..... | 450 feet (triangulated)..... | 1 mile; in lot 3210. |
| Dawson falls..... | Three lower falls 20 feet each (approx.) Upper fall 50 feet (approx.)..... | 3 miles; in lot 3208. |
| Un-named falls..... | 25 feet (approx.)..... | 10 miles; in lot 3494. |
| Horseshoe falls..... | 35 feet (approx.)..... | 12 miles; in lot 3499. |
| Meadow falls..... | 20 feet (approx.)..... | 13 miles; in lot 3998. |
| Un-named falls..... | Said to be about 40 feet..... | 20 miles; a mile or two below lake outlet. |



Helmcken Falls and Myrtle river canyon.

Photograph by F. R. Archibald.

This photograph of Helmcken falls on the Myrtle river is one of the first ever taken of what is probably one of the finest natural power sites of British Columbia's vast hinterland. A sheer fall of 450 feet (triangulated) over which a stream plunges whose estimated minimum flow is 400 sec.-ft., and whose maximum is probably 10,000 sec.-ft., is an unusual sight and one which for majestic grandeur is probably unsurpassed in the Dominion. Studies of the flow of the Myrtle river have been commenced and a year's cycle will be complete on Sept. 1, 1915.

For a matter of historic record it should be stated that Helmcken falls (a photograph of which is printed elsewhere) were discovered by two members of a land survey party in charge of Mr. R. H. Lee, of Kamloops, in the summer of 1913 (Messrs. Luce and Hossack). Although they were said to be known to the Indians, who spoke of them as "the falls which are two big cedars high," these two men are the first white men which are known to have seen the falls. For scenic beauty this wonderful natural power-site is probably without a peer, and will sooner or later become a mecca for tourists from various parts of the world.

The total length of Myrtle river is about 22 miles between the lake and the river's confluence with the Clearwater.

A gauge was established on the Myrtle river on September 1, 1914, by Messrs. E. H. Tredcroft and C. B. Corbould, and a meter measurement made showing a flow of 800 second-feet. After further measurements are made, a year's cycle of records will be available on September 1, 1915. Gauge readings are taken by Mr. P. McDougall weekly. Owing to the inaccessibility of the station, it has been impossible to procure more readings, but, since the stream's behaviour is fairly regular, it is thought that fairly reliable results will be obtained. A very rough estimate, made by comparison of the Myrtle drainage area with that of the Clearwater, places the minimum flow at 400 and the maximum at 10,000 second-feet.

PAUL CREEK (2032).

Location.—Section 31, township 20, range 16, west 6th meridian.

Records available.—July 1 to October 6, 1911; May 12 to September 25, 1912; May 18 to September 30, 1913; April 20 to September 27, 1914.

Drainage area.—Sixty-five square miles.

Gauge.—Vertical staff gauge read weekly by E. L. Ridout.

Channel.—Channel is rocky, and current is very swift at high stages.

Discharge measurements.—The gauge-height curve is fairly well defined. The flow is artificially controlled by a dam on Paul lake.

Winter flow.—Stream usually dries up during winter, or else ice conditions obtain.

Accuracy.—Accuracy, with the exception of flood times, is considered high.

DISCHARGE MEASUREMENTS of Paul Creek below Paul Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-----------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 27..... | E. M. Dann..... | 1505 | 5.5 | 4.60 | 9.02 | 2.25 | 41.4 |
| May. 19..... | C. B. Corbould..... | 1673 | 5.7 | 6.05 | 11.50 | 2.75 | 69.9 |
| July 14..... | C. B. Corbould..... | 1915 | 7.0 | 2.70 | 5.50 | 1.95 | 14.8 |
| " 25..... | E. M. Dann and C. E. Webb.. | 1915 | 5.8 | 1.98 | 6.44 | 1.73 | 12.7 |
| Aug. 8..... | C. B. Corbould..... | 1915 | 6.0 | 3.26 | 7.90 | 2.12 | 25.7 |

For further hydrographic data see Water Resources, Paper Nos. 1 and 8.

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DAILY GAUGE HEIGHT AND DISCHARGE of Paul Creek below Paul Lake, for 1914.

| DAY. | April. | | May. | | June. | | July. | | August. | | September. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | 42.9 | | 14.9 | | 30.8 | | 12.0 | | 13.2 |
| 2 | | | | 45.4 | | 17.4 | | 30.0 | 1.72 | 11.7 | | 12.7 |
| 3 | | | | 48.0 | | 20.0 | | 29.2 | | 13.0 | | 12.2 |
| 4 | | | 2.50 | 50.5 | | 22.5 | | 28.4 | | 14.2 | | 11.7 |
| 5 | | | | 55.0 | | 25.0 | 2.15 | 27.6 | | 15.5 | | 11.2 |
| 6 | | | | 59.5 | | 27.5 | | 26.8 | | 16.6 | | 10.7 |
| 7 | | | | 64.0 | 2.20 | 30.2 | | 25.9 | | 17.9 | 1.65 | 10.2 |
| 8 | | | | 68.5 | | 31.8 | | 25.0 | | 19.2 | | 9.5 |
| 9 | | | | 73.0 | | 33.4 | | 24.1 | 2.00 | 20.5 | | 8.8 |
| 10 | | | 2.85 | 77.6 | | 35.0 | | 23.2 | | 20.5 | | 8.1 |
| 11 | | | | 79.4 | | 36.6 | | 22.3 | | 20.5 | | 7.4 |
| 12 | | | | 81.2 | | 38.2 | | 21.4 | | 20.5 | | 6.7 |
| 13 | | | | 83.0 | | 39.8 | 2.00 | 20.5 | | 20.5 | 1.40 | 6.0 |
| 14 | | | | 84.7 | | 41.4 | | 19.8 | | 20.5 | | 5.6 |
| 15 | | | | 86.5 | 2.4 | 43.0 | | 19.2 | | 20.5 | | 5.2 |
| 16 | | | | 88.3 | | 45.1 | | 18.6 | 2.00 | 20.5 | | 4.8 |
| 17 | | | 3.00 | 90.0 | | 47.3 | | 18.0 | | 20.0 | | 4.4 |
| 18 | | | | 87.1 | | 49.4 | | 17.4 | | 19.5 | | 3.9 |
| 19 | | | | 84.2 | | 51.6 | 1.90 | 16.8 | | 19.0 | | 3.5 |
| 20 | 1.10 | 2.6 | | 81.3 | | 53.7 | | 16.3 | | 18.4 | 1.15 | 3.1 |
| 21 | | 7.2 | | 78.4 | | 55.8 | | 15.9 | | 17.9 | | 2.7 |
| 22 | | 11.8 | | 75.5 | 2.60 | 58.0 | | 15.4 | | 17.3 | | 2.4 |
| 23 | | 16.4 | | 72.6 | | 53.9 | | 15.0 | 1.90 | 16.8 | | 2.0 |
| 24 | | 21.0 | 2.75 | 69.7 | | 49.8 | | 14.5 | | 16.5 | | 1.7 |
| 25 | | 25.6 | | 61.6 | | 45.7 | | 14.1 | | 16.1 | | 1.4 |
| 26 | 2.20 | 30.2 | | 53.4 | | 41.5 | 1.80 | 13.7 | | 15.7 | | 1.0 |
| 27 | | 32.7 | | 45.2 | | 37.4 | | 13.5 | | 15.3 | 0.90 | 0.7 |
| 28 | | 35.2 | | 37.0 | 2.25 | 33.3 | | 13.2 | | 14.9 | | |
| 29 | | 37.8 | | 28.8 | | 32.4 | | 12.9 | | 14.5 | | |
| 30 | | 40.3 | | 20.6 | | 31.6 | | 12.6 | | 14.1 | | |
| 31 | | | 1.75 | 12.4 | | | | 12.3 | 1.80 | 13.7 | | |

MONTHLY DISCHARGE of Paul Creek below Paul Lake, for 1914.

(Drainage area, 65 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet |
| May | 90.0 | 12.4 | 64.0 | 0.98 | 1.1 | 3,935 |
| June | 58.0 | 14.9 | 38.1 | 0.6 | .7 | 2,267 |
| July | 30.8 | 12.3 | 19.8 | 0.3 | .3 | 1,217 |
| August | 20.5 | 11.7 | 17.2 | 0.26 | .3 | 1,057 |
| September | 13.2 | 0.7 | 6.3 | 0.97 | 1.1 | 375 |
| October | | | | | | |
| November | | | | | | |
| December | | | | | | |
| The period | 90.0 | 0.7 | 29.1 | 0.62 | 3.4 | 8,851 |

NOTE.—Precipitation 10 to 50 inches annually.

Flow artificially controlled by a dam on Paul lake.

The estimated flow for April is 600 zero feet, while during the winter months the run-off is practically nil.

RAFT RIVER (2055).

Location.—Raft river, Water District No. 2.

Records Available.—June 1, 1914, to December 14, 1914.

Drainage Area.—One hundred and twenty-five square miles.

Gauge.—Standard chain gauge on highway bridge, graduated in feet and tenths, having a range from 3.0 to 9.0, and read by J. McLennan, Raft River P.O.

Channel.—Average width of channel 150 feet. Bed of stream composed of rock, sand, and gravel, and permanent as far as can be ascertained.

Discharge Measurements.—Only three discharge measurements were taken on this river during 1914 owing to its being situated in country only just being opened up by this survey, but all results of these measurements point to a high degree of accuracy eventually being obtained.

Winter Flow.—Ice conditions obtain on this river during the latter half of December, throughout January, and during the first half of February.

Accuracy.—The accuracy of returns is doubtful, since stream is not completely rated.

RAFT RIVER.

Raft river, which joins the North Thompson 76 miles above Kamloops and 5 miles above the mouth of the Clearwater river, rises in the hills about 40 miles north of its mouth.

The lowest half-mile of the river has a sluggish flow, its banks are low and liable to overflow in freshet. Above this point is a canyon about 500 feet wide at its widest section; in the canyon are a series of falls, the two highest being about three-quarters of a mile from the stream's mouth, the lower having a natural drop of 15 feet, and the upper one, 25 feet. No information relating to the upper section of the river is at present available.

A station was established at MacLennan's ranch, half a mile from the mouth, by Mr. E. H. Tredercroft on June 2, 1914. Although it was impracticable to thoroughly rate the stream during the year, further meterings will be taken in 1915, and more complete returns made public at the close of that year.

DISCHARGE MEASUREMENTS of Raft River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|--|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 2 | E. H. Tredercroft | 1923 | 105 | 493.8 | 5.47 | 8.00 | 2703.0 |
| July 26 | do | 1923 | 80 | 135.4 | 2.05 | 4.35 | 277.5 |
| Aug. 28 | E. H. Tredercroft and C. B. Corbould | 1923 | 67 | 71.7 | 1.18 | 3.55 | 84.7 |

An effort will be made to completely rate this station during 1915.

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DAILY GAUGE HEIGHT AND DISCHARGE of Raft River, 1 mile above mouth, for 1914.

| DAY. | June. | |
|---------|--------------|-----------|
| | Gauge Height | Discharge |
| | Feet. | Sec.-ft. |
| 1..... | 8 30 | 2,940 |
| 2..... | 7 90 | 2,620 |
| 3..... | 8 20 | 2,860 |
| 4..... | 7 80 | 2,540 |
| 5..... | 7 30 | 2,145 |
| 6..... | 6 80 | 1,760 |
| 7..... | 6 40 | 1,450 |
| 8..... | 6 50 | 1,525 |
| 9..... | 6 70 | 1,680 |
| 10..... | 7 00 | 1,920 |
| 11..... | 7 20 | 2,070 |
| 12..... | 7 30 | 2,145 |
| 13..... | 7 10 | 2,000 |
| 14..... | 7 20 | 2,070 |
| 15..... | 7 20 | 2,070 |
| 16..... | 7 40 | 2,220 |
| 17..... | 7 50 | 2,300 |
| 18..... | 7 60 | 1,920 |
| 19..... | 6 90 | 1,840 |
| 20..... | 6 40 | 1,450 |
| 21..... | 6 40 | 1,450 |
| 22..... | 6 10 | 1,240 |
| 23..... | 6 10 | 1,240 |
| 24..... | 6 30 | 1,380 |
| 25..... | 6 40 | 1,450 |
| 26..... | 6 30 | 1,380 |
| 27..... | 6 20 | 1,310 |
| 28..... | 6 30 | 1,380 |
| 29..... | 6 30 | 1,380 |
| 30..... | 6 10 | 1,240 |

DAILY GAUGE HEIGHT AND DISCHARGE of Raft River 1 mile above mouth, for 1914—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5-90 | 1,100 | 3-90 | 155 | 3-30 | 50 | 4-50 | 330 | 4-60 | 370 | 3-90 | 155 |
| 2 | 5-70 | 960 | 3-80 | 135 | 3-20 | 35 | 4-40 | 295 | 4-50 | 330 | 3-90 | 155 |
| 3 | 5-70 | 960 | 3-70 | 115 | 3-20 | 35 | 4-40 | 295 | 4-60 | 370 | 3-90 | 155 |
| 4 | 5-60 | 895 | 3-80 | 135 | 3-20 | 35 | 4-20 | 235 | 4-50 | 330 | 3-80 | 135 |
| 5 | 5-50 | 830 | 3-70 | 115 | 3-10 | 20 | 4-10 | 205 | 4-40 | 295 | 3-80 | 135 |
| 6 | 5-30 | 710 | 3-60 | 95 | 3-10 | 20 | 4-00 | 180 | 4-20 | 235 | 3-70 | 115 |
| 7 | 5-20 | 655 | 3-70 | 115 | 3-10 | 20 | 4-00 | 180 | 4-20 | 235 | 3-80 | 135 |
| 8 | 5-10 | 605 | 3-80 | 135 | 3-20 | 35 | 3-90 | 155 | 4-20 | 235 | 3-80 | 135 |
| 9 | 5-00 | 555 | 3-70 | 115 | 3-30 | 50 | 3-90 | 155 | 4-20 | 235 | 3-90 | 155 |
| 10 | 4-90 | 505 | 3-70 | 115 | 3-50 | 80 | 3-90 | 155 | 4-20 | 235 | 3-90 | 155 |
| 11 | 4-70 | 410 | 3-70 | 115 | 3-70 | 115 | 4-00 | 180 | 4-10 | 205 | 3-90 | 155 |
| 12 | 4-70 | 410 | 3-60 | 95 | 3-90 | 155 | 4-10 | 205 | 4-10 | 205 | 4-10 | 205 |
| 13 | 5-00 | 555 | 3-60 | 95 | 3-90 | 155 | 4-30 | 265 | 3-90 | 155 | 4-70 | 410 |
| 14 | 5-40 | 770 | 3-50 | 80 | 3-80 | 135 | 4-40 | 295 | 3-90 | 155 | 5-20 | 655 |
| 15 | 6-20 | 1,310 | 3-40 | 65 | 3-70 | 115 | 4-20 | 235 | 3-90 | 155 | | |
| 16 | 5-35 | 740 | 3-40 | 65 | 3-70 | 115 | 4-00 | 180 | 4-00 | 180 | | |
| 17 | 5-05 | 580 | 3-40 | 65 | 3-80 | 135 | 4-30 | 265 | 4-10 | 205 | | |
| 18 | 4-75 | 432 | 3-40 | 65 | 4-20 | 235 | 4-90 | 505 | 4-10 | 205 | | |
| 19 | 4-65 | 390 | 3-40 | 65 | 4-50 | 330 | 4-90 | 505 | 4-00 | 180 | | |
| 20 | 4-45 | 312 | 3-40 | 65 | 4-60 | 370 | 4-70 | 410 | 4-00 | 180 | | |
| 21 | 4-40 | 295 | 3-30 | 50 | 4-40 | 295 | 4-60 | 370 | 3-90 | 155 | | |
| 22 | 4-35 | 280 | 3-30 | 50 | 4-30 | 265 | 4-40 | 295 | 3-80 | 135 | | |
| 23 | 4-30 | 265 | 3-20 | 35 | 4-20 | 235 | 4-20 | 235 | 3-80 | 135 | | |
| 24 | 4-30 | 265 | 3-20 | 35 | 4-20 | 235 | 4-20 | 235 | 3-70 | 115 | | |
| 25 | 4-20 | 235 | 3-20 | 35 | 4-10 | 205 | 4-20 | 235 | 3-70 | 115 | | |
| 26 | 4-10 | 205 | 3-20 | 35 | 4-00 | 180 | 4-20 | 235 | 3-80 | 135 | | |
| 27 | 4-20 | 235 | 3-20 | 35 | 4-20 | 235 | 4-20 | 235 | 3-90 | 155 | | |
| 28 | 4-90 | 505 | 3-40 | 65 | 4-30 | 265 | 4-40 | 295 | 3-90 | 155 | | |
| 29 | 4-30 | 265 | 3-40 | 65 | 4-50 | 330 | 4-40 | 295 | 3-90 | 155 | | |
| 30 | 4-20 | 235 | 3-40 | 65 | 4-50 | 330 | 4-60 | 370 | 3-90 | 155 | | |
| 31 | 4-10 | 205 | 3-30 | 50 | | | 4-60 | 370 | | | | |

MONTHLY DISCHARGE of Raft River at 1 mile above mouth, for 1914.

(Drainage area, 125 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches | Total in acre-feet. |
| | | | | | on Drainage area. | |
| June | 2,940 | 1,240 | 1,499 | 12-0 | 13-39 | 89,196 |
| July | 1,310 | 205 | 538 | 4-3 | 4-9 | 33,080 |
| August | 155 | 35 | 81 | 0-65 | 0-75 | 4,984 |
| September | 370 | 20 | 160 | 1-3 | 1-45 | 9,520 |
| October | 505 | 155 | 271 | 2-2 | 2-54 | 16,663 |
| November | 370 | 115 | 203 | 1-6 | 1-78 | 12,479 |

NOTE.—Precipitation varies from 20 inches at mouth to 50 inches at source (estimated).
Drainage area possibly in error.
Station established, June, 1914.

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SIWASH CREEK (2058).

Location.—Section 12, township 22, range 16, west 6th meridian.

Records Available.—June 7 to July 28, 1914.

Drainage Area.—Seven square miles.

Gauge.—Standard vertical staff gauge installed by Cippoletti weir and read daily by J. S. Wardell.

Channel.—Straight above weir. Velocity, medium.

Discharge Measurements.—Three discharge measurements have been taken during 1914 at varying stages.

Winter Flow.—Stream usually runs dry during August.

Accuracy.—Accuracy of results compiled from weir discharge table considered very high, probably within 5 per cent.

DISCHARGE MEASUREMENTS of Siwash Creek, above Heffley Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 2..... | C. B. Corbould..... | 1915 | 6 | 4.0 | 0.71 | ..... | 2.9 |
| " 8..... | do..... | 1915 | 6 | 4.7 | 0.89 | 2.9 | 4.2 |
| " 29..... | do..... | 1915 | 6 | 3.8 | 0.45 | 2.8 | 1.7 |

Meterings taken to check weir measurements.

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DAILY GAUGE HEIGHT AND DISCHARGE of Siwash Creek, near Hefley Creek,
for 1914.

| DAY. | June. | | July. | |
|------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0-19 | 1-1 |
| 2 | | 2-9 | 0-14 | 0-7 |
| 3 | | | 0-14 | 0-7 |
| 4 | | | 0-14 | 0-7 |
| 5 | | | 0-12 | 0-6 |
| 6 | | | 0-12 | 0-6 |
| 7 | 0-34 | 2-7 | 0-14 | 0-7 |
| 8 | 0-34 | 2-7 | 0-04 | 0-1 |
| 9 | 0-36 | 2-9 | 0-04 | 0-1 |
| 10 | 0-39 | 3-2 | 0-04 | 0-1 |
| 11 | 0-44 | 3-8 | 0-04 | 0-1 |
| 12 | 0-34 | 2-7 | 0-04 | 0-1 |
| 13 | 0-34 | 2-7 | 0-04 | 0-1 |
| 14 | 0-34 | 2-7 | 0-04 | 0-1 |
| 15 | 0-29 | 2-1 | 0-14 | 0-7 |
| 16 | 0-29 | 2-1 | 0-09 | 0-4 |
| 17 | 0-24 | 1-6 | 0-09 | 0-4 |
| 18 | 0-24 | 1-6 | 0-04 | 0-1 |
| 19 | 0-24 | 1-6 | 0-04 | 0-1 |
| 20 | 0-24 | 1-6 | 0-04 | 0-1 |
| 21 | 0-24 | 1-6 | 0-04 | 0-1 |
| 22 | 0-19 | 1-1 | 0-04 | 0-1 |
| 23 | 0-24 | 1-6 | 0-04 | 0-1 |
| 24 | 0-24 | 1-6 | 0-04 | 0-1 |
| 25 | 0-24 | 1-6 | 0-04 | 0-1 |
| 26 | 0-24 | 1-6 | 0-04 | 0-1 |
| 27 | 0-24 | 1-6 | 0-04 | 0-1 |
| 28 | 0-24 | 1-6 | 0-04 | 0-1 |
| 29 | 0-24 | 1-6 | | |
| 30 | 0-19 | 1-1 | | |
| 31 | | | | |

MONTHLY DISCHARGE of Siwash Creek above Hefley Lake, for 1914.

(Drainage area, 7 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|--------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June | 3-8 | 1-1 | 2-1 | 0-30 | 0-33 | 125-0 |
| July | 1-1 | 6-1 | 0-3 | 0-04 | 0-05 | 18-4 |

NOTE.—Station was established on June 7. Water stopped coming down the creek on July 30. Cippoletti weir station.

THOMPSON RIVER AT KAMLOOPS (2040).

Location.—Section 7, township 20, range 17, west 6th meridian.*Records Available.*—April 1 to September 30, 1911; March 24 to December 31, 1912; April 1 to December 31, 1913; January 1 to December 31, 1914.*Drainage Area.*—14,400 square miles.

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Gauge.—Standard staff gauge on traffic bridge, read daily by Geo. Claperton.

Channel.—Width of channel varies from 750 to 850 feet at the station, while at high-water depth is from 12 to 17 feet higher than at low stages.

Discharge Measurements.—The curve for this river is well defined, measurements having been taken at various stages.

Winter Flow.—River generally freezes over about 1st January, and remains so until early in March.

On March 5, 1912, a metering was made under ice cover and showed a discharge of 3,980 second-feet.

Accuracy.—The accuracy on the whole is high.

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Kamloops, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-10 | 5,300 | 0-10 | 5,300 | 0-20 | 5,600 | 0-10 | 5,300 | 3-70 | 18,950 | 8-10 | 45,000 |
| 2 | 0-20 | 5,600 | 0-10 | 5,300 | 0-20 | 5,600 | 0-20 | 5,600 | 4-10 | 20,800 | 8-4 | 47,300 |
| 3 | 0-20 | 5,600 | 0-10 | 5,300 | 0-30 | 5,900 | 0-20 | 5,600 | 4-70 | 23,800 | 8-6 | 48,800 |
| 4 | 0-30 | 5,900 | 0-10 | 5,300 | 0-20 | 5,600 | 0-10 | 5,300 | 5-50 | 28,000 | 10-0 | 60,200 |
| 5 | 0-30 | 5,900 | 0-0 | 5,000 | 0-20 | 5,600 | 0-20 | 5,600 | 5-90 | 30,400 | 10-6 | 65,200 |
| 6 | 0-20 | 5,600 | 0-0 | 5,000 | 0-20 | 5,600 | 0-20 | 5,600 | 5-60 | 28,600 | 10-6 | 65,200 |
| 7 | 0-30 | 5,900 | 0-0 | 5,000 | 0-20 | 5,600 | 0-20 | 5,600 | 5-30 | 26,800 | 10-2 | 61,800 |
| 8 | 0-50 | 6,600 | 0-0 | 5,000 | 0-30 | 5,900 | 0-30 | 5,900 | 5-50 | 28,000 | 10-0 | 60,200 |
| 9 | 0-50 | 6,600 | 0-0 | 5,000 | 0-20 | 5,600 | 0-50 | 6,600 | 5-60 | 28,600 | 9-8 | 58,500 |
| 10 | 0-30 | 5,900 | 0-0 | 5,000 | 0-20 | 5,600 | 0-60 | 6,950 | 5-50 | 28,000 | 9-5 | 56,000 |
| 11 | 0-40 | 6,250 | 0-0 | 5,000 | 0-20 | 5,600 | 0-80 | 7,550 | 5-80 | 29,800 | 9-5 | 56,000 |
| 12 | 0-30 | 5,900 | 0-0 | 5,000 | 0-20 | 5,600 | 0-90 | 7,900 | 6-20 | 32,100 | 9-8 | 58,500 |
| 13 | 0-30 | 5,900 | 0-0 | 5,000 | 0-30 | 5,900 | 1-10 | 8,500 | 6-60 | 34,600 | 9-8 | 58,500 |
| 14 | 0-20 | 5,600 | 0-0 | 5,000 | 0-40 | 6,250 | 1-20 | 8,900 | 6-80 | 35,800 | 10-0 | 60,200 |
| 15 | 0-20 | 5,600 | 0-2 | 4,500 | 0-30 | 5,900 | 1-60 | 10,350 | 7-60 | 41,400 | 10-4 | 63,500 |
| 16 | 0-30 | 5,900 | 0-2 | 4,500 | 0-20 | 5,600 | 1-90 | 11,500 | 8-60 | 48,800 | 10-9 | 67,700 |
| 17 | 0-40 | 6,250 | 0-2 | 4,500 | 0-20 | 5,600 | 2-40 | 13,400 | 9-20 | 53,600 | 11-4 | 72,000 |
| 18 | 0-30 | 5,900 | 0-2 | 4,500 | 0-30 | 5,900 | 2-50 | 13,800 | 9-20 | 53,600 | 11-8 | 75,500 |
| 19 | 0-30 | 5,900 | 0-2 | 4,500 | 0-20 | 5,600 | 2-50 | 13,800 | 9-00 | 52,000 | 12-0 | 77,300 |
| 20 | 0-20 | 5,600 | 0-2 | 4,500 | 0-20 | 5,600 | 2-80 | 15,000 | 8-70 | 49,700 | 12-0 | 77,300 |
| 21 | 0-20 | 5,600 | 0-2 | 4,500 | 0-20 | 5,600 | 2-80 | 15,000 | 8-50 | 48,050 | 11-6 | 73,700 |
| 22 | 0-20 | 5,600 | 0-2 | 4,500 | 0-20 | 5,600 | 2-80 | 15,000 | 8-60 | 48,800 | 11-2 | 70,300 |
| 23 | 0-20 | 5,600 | 0-2 | 4,500 | 0-20 | 5,600 | 3-00 | 15,800 | 8-90 | 51,200 | 11-4 | 72,000 |
| 24 | 0-20 | 5,600 | 0-2 | 4,500 | 0-30 | 5,900 | 2-90 | 15,400 | 9-20 | 53,600 | 10-6 | 65,200 |
| 25 | 0-20 | 5,600 | 0-2 | 4,500 | 0-20 | 5,600 | 2-90 | 15,400 | 9-60 | 56,800 | 10-1 | 61,700 |
| 26 | 0-20 | 5,600 | 0-1 | 4,750 | 0-20 | 5,600 | 3-10 | 16,250 | 9-80 | 58,500 | 9-8 | 58,500 |
| 27 | 0-10 | 5,300 | 0-1 | 4,750 | 0-10 | 5,300 | 3-30 | 17,150 | 9-60 | 56,800 | 9-8 | 58,500 |
| 28 | 0-10 | 5,300 | 0-2 | 5,600 | 0-10 | 5,300 | 3-40 | 17,600 | 9-30 | 54,400 | 10-0 | 60,200 |
| 29 | 0-10 | 5,300 | | | 0-20 | 5,600 | 3-30 | 17,150 | 8-90 | 51,200 | 10-0 | 60,200 |
| 30 | 0-20 | 5,600 | | | 0-0 | 5,000 | 3-50 | 18,050 | 8-50 | 48,050 | 10-1 | 61,000 |
| 31 | 0-20 | 5,600 | | | 0-0 | 5,000 | | | 8-30 | 46,500 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Kamloops, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 10.1 | 61,000 | 6.50 | 34,000 | 3.50 | 18,050 | 4.00 | 20,300 | 2.50 | 13,800 | 2.20 | 12,600 |
| 2 | 10.2 | 61,800 | 6.30 | 32,700 | 3.30 | 17,150 | 4.20 | 21,300 | 3.00 | 15,800 | 2.00 | 11,800 |
| 3 | 10.5 | 64,300 | 6.40 | 33,400 | 3.20 | 16,700 | 4.10 | 20,800 | 3.00 | 15,800 | 2.10 | 12,200 |
| 4 | 10.7 | 66,000 | 6.50 | 34,000 | 3.00 | 15,800 | 4.20 | 21,300 | 3.10 | 16,250 | 1.80 | 11,100 |
| 5 | 10.9 | 67,700 | 6.50 | 34,000 | 3.50 | 18,050 | 3.50 | 18,050 | 3.20 | 16,700 | 1.70 | 10,700 |
| 6 | 10.9 | 67,700 | 6.50 | 34,000 | 3.30 | 17,150 | 3.20 | 16,700 | 3.00 | 15,800 | 1.80 | 11,100 |
| 7 | 10.7 | 66,000 | 6.20 | 32,100 | 3.40 | 17,600 | 3.00 | 15,800 | 3.10 | 16,250 | 1.60 | 10,350 |
| 8 | 10.3 | 62,600 | 6.00 | 30,900 | 3.20 | 16,700 | 2.80 | 15,000 | 2.80 | 15,000 | 1.40 | 9,650 |
| 9 | 10.1 | 61,000 | 6.00 | 30,900 | 3.00 | 15,800 | 2.70 | 14,600 | 2.70 | 14,600 | 1.40 | 9,650 |
| 10 | 9.8 | 58,500 | 5.60 | 28,600 | 3.00 | 15,800 | 2.50 | 13,800 | 2.80 | 15,000 | 1.30 | 9,250 |
| 11 | 9.6 | 56,800 | 5.30 | 26,800 | 3.50 | 18,050 | 2.30 | 13,000 | 2.60 | 14,200 | 1.20 | 8,900 |
| 12 | 9.60 | 56,800 | 5.60 | 28,600 | 3.10 | 16,250 | 2.20 | 12,600 | 2.70 | 14,600 | 0.70 | 7,300 |
| 13 | 9.6 | 56,800 | 4.90 | 24,800 | 3.20 | 16,700 | 2.50 | 13,800 | 2.80 | 15,600 | 0.40 | 6,250 |
| 14 | 9.8 | 58,500 | 4.80 | 24,300 | 3.00 | 15,800 | 2.40 | 13,400 | 2.60 | 14,200 | 0.0 | 5,000 |
| 15 | 10.0 | 60,200 | 4.70 | 23,800 | 2.80 | 15,000 | 2.30 | 13,000 | 2.60 | 14,200 | 0.0 | 5,000 |
| 16 | 10.4 | 63,500 | 4.60 | 23,300 | 2.50 | 13,800 | 2.20 | 12,600 | 2.50 | 13,800 | 0.0 | 5,000 |
| 17 | 10.2 | 61,800 | 5.00 | 25,300 | 2.30 | 13,000 | 2.50 | 13,800 | 2.50 | 13,800 | 0.0 | 5,000 |
| 18 | 9.6 | 56,800 | 4.90 | 24,800 | 2.20 | 12,600 | 2.30 | 13,000 | 2.40 | 13,400 | 0.0 | 5,000 |
| 19 | 9.0 | 52,000 | 4.80 | 24,300 | 2.10 | 12,200 | 2.20 | 12,600 | 2.50 | 13,800 | 0.0 | 5,000 |
| 20 | 8.7 | 49,700 | 4.50 | 22,800 | 2.20 | 12,600 | 3.10 | 16,250 | 2.30 | 13,000 | 0.0 | 5,000 |
| 21 | 8.6 | 48,800 | 4.40 | 22,300 | 3.00 | 15,800 | 3.10 | 16,250 | 2.20 | 12,600 | 0.0 | 5,000 |
| 22 | 8.8 | 50,500 | 4.50 | 22,800 | 2.80 | 15,000 | 3.00 | 15,800 | 2.10 | 12,200 | 0.0 | 5,000 |
| 23 | 8.1 | 45,000 | 4.50 | 22,800 | 3.00 | 15,800 | 3.10 | 16,250 | 2.00 | 11,800 | 0.0 | 5,000 |
| 24 | 7.7 | 42,100 | 4.40 | 22,300 | 2.80 | 15,000 | 2.80 | 15,000 | 2.30 | 13,000 | 0.0 | 5,000 |
| 25 | 7.6 | 41,400 | 4.10 | 20,800 | 2.70 | 14,600 | 2.70 | 14,600 | 2.20 | 12,600 | 0.0 | 5,000 |
| 26 | 7.5 | 40,700 | 4.00 | 20,300 | 2.90 | 15,400 | 2.60 | 14,200 | 2.00 | 11,800 | 0.0 | 5,000 |
| 27 | 7.4 | 40,000 | 4.00 | 20,300 | 3.00 | 15,800 | 2.50 | 13,800 | 2.10 | 12,200 | 0.0 | 5,000 |
| 28 | 7.4 | 40,000 | 4.00 | 20,300 | 3.50 | 18,050 | 2.30 | 13,000 | 1.80 | 11,100 | 0.0 | 5,000 |
| 29 | 7.5 | 40,700 | 3.80 | 19,400 | 4.00 | 20,300 | 2.30 | 13,000 | 1.80 | 11,100 | 0.0 | 5,000 |
| 30 | 7.1 | 37,900 | 3.80 | 19,400 | 4.00 | 20,300 | 2.50 | 13,800 | 1.70 | 10,700 | 0.0 | 5,000 |
| 31 | 6.6 | 34,600 | 4.00 | 20,300 | | | 2.40 | 13,400 | | | 0.0 | 5,000 |

SESSIONAL PAPER No. 25e

MONTHLY DISCHARGE of Thompson River at Kamloops, for 1914.

(Drainage area, 14,400 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | Run-Off. | |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January..... | 6,600 | 5,300 | 5,755 | 0.40 | 0.46 | 353,860 |
| February..... | 5,300 | 4,500 | 4,850 | 0.33 | 0.34 | 269,360 |
| March..... | 6,250 | 5,000 | 5,621 | 0.39 | 0.45 | 345,622 |
| April..... | 18,050 | 5,300 | 11,051 | 0.76 | 0.85 | 657,580 |
| May..... | 58,500 | 18,950 | 40,879 | 2.84 | 3.27 | 2,513,519 |
| June..... | 77,300 | 45,000 | 62,510 | 4.34 | 4.84 | 3,719,600 |
| July..... | 67,700 | 34,600 | 53,909 | 3.74 | 4.31 | 3,314,752 |
| August..... | 34,000 | 19,400 | 25,842 | 1.79 | 2.06 | 1,588,962 |
| September..... | 20,300 | 12,200 | 16,028 | 1.11 | 1.24 | 953,727 |
| October..... | 21,300 | 12,600 | 15,187 | 1.05 | 1.21 | 933,807 |
| November..... | 16,700 | 10,700 | 13,803 | 0.95 | 1.06 | 821,377 |
| December..... | 12,600 | 5,000 | 7,124 | 0.49 | 0.56 | 438,038 |
| The year..... | 77,600 | 4,500 | 21,879 | 1.51 | 20.65 | 15,910,204 |

NOTE.—The annual precipitation of the North Thompson river above Kamloops varies from 7 to 12 inches at Kamloop to about 40 inches at the Albreda summit, while on the South Thompson, Shuswap lakes, and tributary streams it varies to a maximum of 40 inches annually.

It is to be noted that the flow recorded at the station "Thompson river at Kamloops" comprises that of both the North and South Thompson, the station being established below their confluence.

TRANQUILLE RIVER (2043).

Location.—Section 36, township 20, range 19, west 6th meridian.

Records Available.—July 4 to October 21, 1911; March 29 to September 7, 1912; May 1 to October 31, 1913; May 3 to November 14, 1914.

Drainage Area.—Two hundred and thirty square miles.

Gauge.—Standard vertical gauge read daily by Eug. Cooney.

Channel.—Straight at the gauge section, about 20 feet wide. Bed of stream composed of stone and boulders and control is good.

Discharge Measurements.—Gauge-height discharge curve is well defined.

Winter Flow.—Ice conditions prevail during December, January, and February.

Accuracy.—High, results compiled from a well-rated curve.

DISCHARGE MEASUREMENTS of Tranquille River near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|----------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec-ft |
| May 30. | C. B. Corbould | 1915 | 18.5 | 31.0 | 4.24 | 1.35 | 132.0 |
| Aug. 4 | C. B. Corbould | 1915 | 15 | 14.5 | 0.59 | 0.65 | 8.6 |

For further meterings and hydrographic data see Water Resources Paper Nos. 1 and 8

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Tranquille River at Cooney's, Ranch, for 1914.

| DAY. | May. | | June. | |
|------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1-35 | 90 |
| 2 | | | 1-35 | 90 |
| 3 | | | 1-30 | 80 |
| 4 | 2-70 | 377 | 1-25 | 71 |
| 5 | 2-20 | 340 | 1-20 | 62 |
| 6 | 2-10 | 302 | 1-20 | 62 |
| 7 | 2-10 | 302 | 1-27 | 74 |
| 8 | 2-10 | 302 | 1-30 | 80 |
| 9 | 2-10 | 302 | 1-30 | 80 |
| 10 | 2-20 | 340 | 1-32 | 84 |
| 11 | 2-30 | 382 | 1-37 | 95 |
| 12 | 2-60 | 524 | 1-32 | 84 |
| 13 | 2-60 | 524 | 1-30 | 80 |
| 14 | 2-60 | 524 | 1-30 | 80 |
| 15 | 2-70 | 577 | 1-30 | 80 |
| 16 | 2-50 | 473 | 1-25 | 71 |
| 17 | 2-46 | 427 | 1-25 | 71 |
| 18 | 2-20 | 340 | 1-20 | 62 |
| 19 | 2-10 | 302 | 1-15 | 53 |
| 20 | 2-00 | 267 | 1-12 | 48 |
| 21 | 1-95 | 250 | 1-10 | 45 |
| 22 | 1-90 | 234 | 1-10 | 45 |
| 23 | 1-85 | 219 | 1-12 | 48 |
| 24 | 1-80 | 204 | 1-15 | 53 |
| 25 | 1-75 | 189 | 1-20 | 62 |
| 26 | 1-60 | 150 | 1-17 | 56 |
| 27 | 1-50 | 125 | 1-12 | 48 |
| 28 | 1-40 | 101 | 1-10 | 45 |
| 29 | 1-35 | 90 | 1-07 | 41 |
| 30 | 1-32 | 84 | 1-05 | 38 |
| 31 | 1-32 | 84 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Tranquille River at Cooney's Ranch,
for 1915.

| DAY. | July. | | August. | | September. | | October. | | November. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-02 | 34 | 0-70 | 10 | 0-44 | 4 | 0-59 | 7 | 0-69 | 10 |
| 2..... | 1-00 | 31 | 0-67 | 9 | 0-44 | 4 | 0-61 | 7 | 0-69 | 10 |
| 3..... | 0-97 | 28 | 0-67 | 9 | 0-44 | 4 | 0-61 | 7 | 0-69 | 10 |
| 4..... | 0-92 | 23 | 0-65 | 8 | 0-44 | 4 | 0-59 | 7 | 0-71 | 10 |
| 5..... | 0-90 | 21 | 0-64 | 8 | 0-44 | 4 | 0-59 | 7 | 0-74 | 12 |
| 6..... | 0-90 | 21 | 0-61 | 7 | 0-44 | 4 | 0-59 | 7 | 0-74 | 12 |
| 7..... | 0-87 | 19 | 0-64 | 8 | 0-44 | 4 | 0-59 | 7 | 0-71 | 10 |
| 8..... | 0-87 | 19 | 0-66 | 9 | 0-54 | 6 | 0-59 | 7 | 0-71 | 10 |
| 9..... | 0-85 | 18 | 0-64 | 8 | 0-56 | 6 | 0-59 | 7 | 0-71 | 10 |
| 10..... | 0-82 | 16 | 0-64 | 8 | 0-56 | 6 | 0-59 | 7 | 0-71 | 10 |
| 11..... | 0-80 | 15 | 0-61 | 7 | 0-56 | 6 | 0-59 | 7 | 0-71 | 10 |
| 12..... | 0-80 | 15 | 0-61 | 7 | 0-56 | 6 | 0-64 | 8 | 0-71 | 10 |
| 13..... | 0-77 | 13 | 0-59 | 7 | 0-56 | 6 | 0-61 | 7 | 0-71 | 10 |
| 14..... | 0-80 | 15 | 0-56 | 6 | 0-59 | 7 | 0-61 | 7 | 0-79 | 14 |
| 15..... | 0-82 | 16 | 0-56 | 6 | 0-59 | 7 | 0-61 | 7 | | |
| 16..... | 0-82 | 16 | 0-54 | 6 | 0-59 | 7 | 0-61 | 7 | | |
| 17..... | 0-80 | 15 | 0-54 | 6 | 0-59 | 7 | 0-61 | 7 | | |
| 18..... | 0-77 | 13 | 0-51 | 5 | 0-59 | 7 | 0-61 | 7 | | |
| 19..... | 0-75 | 12 | 0-51 | 5 | 0-61 | 7 | 0-64 | 8 | | |
| 20..... | 0-72 | 11 | 0-49 | 5 | 0-59 | 7 | 0-64 | 8 | | |
| 21..... | 0-77 | 13 | 0-49 | 5 | 0-59 | 7 | 0-64 | 8 | | |
| 22..... | 0-75 | 12 | 0-54 | 6 | 0-59 | 7 | 0-64 | 8 | | |
| 23..... | 0-72 | 11 | 0-51 | 5 | 0-59 | 7 | 0-64 | 8 | | |
| 24..... | 0-80 | 15 | 0-49 | 5 | 0-59 | 7 | 0-64 | 8 | | |
| 25..... | 0-75 | 12 | 0-49 | 5 | 0-61 | 7 | 0-64 | 8 | | |
| 26..... | 0-70 | 10 | 0-49 | 5 | 0-61 | 7 | 0-64 | 8 | | |
| 27..... | 0-70 | 10 | 0-46 | 4 | 0-59 | 7 | 0-64 | 8 | | |
| 28..... | 0-70 | 10 | 0-46 | 4 | 0-59 | 7 | 0-64 | 8 | | |
| 29..... | 0-70 | 10 | 0-46 | 4 | 0-59 | 7 | 0-64 | 8 | | |
| 30..... | 0-70 | 10 | 0-44 | 4 | 0-59 | 7 | 0-64 | 8 | | |
| 31..... | 0-70 | 10 | 0-44 | 4 | | | 0-64 | 8 | | |

MONTHLY DISCHARGE of Tranquille River, near Cooney's Ranch, for 1914.

(Drainage area, 230 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF | |
|-----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| May..... | 577-0 | 84-0 | 314-0 | 1-36 | 1-57 | 19,307 |
| June..... | 95-0 | 38-0 | 60-0 | 0-29 | 0-32 | 3,927 |
| July..... | 34-0 | 10-0 | 16-0 | 0-07 | 0-08 | 984 |
| August..... | 10-0 | 4-0 | 6-3 | 0-03 | 0-04 | 357 |
| September..... | 7-0 | 4-0 | 6-1 | 0-03 | 0-04 | 363 |
| October..... | 8-0 | 7-0 | 7-4 | 0-03 | 0-03 | 455 |
| The period..... | 577-0 | 4-0 | 69-3 | 0-30 | 2-06 | 25,423 |

NOTE.—Precipitation over the drainage area probably varies from 8 to 10 inches annually, but it is probable that there are large evaporation losses in Dubois, Pust, and Tranquille lakes.

KAMLOOPS DIVISION.

ADAMS RIVER (2005).

Location.—Section 6, township 23, range 12, west 6th meridian.

Records Available—July 1 to August 31, 1911; January 1 to December 31, 1912; January 1st to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand six hundred square miles.

Gauge.—Standard vertical staff gauge read by Mrs. Sturgill, Chase, B.C., up to October 17, 1914.

On October 17, a Gurley automatic water stage recorder No. 630 was put into operation, at a point 50 feet below the old staff gauge. A series of readings on both gauges at the same instant gives a definite relationship between old and new gauge readings.

Channel.—The channel varies in width from 300 to 500 feet above the dam where meterings are made. The velocities are uniform, the mean never exceeding 3.0 feet per second at the measuring section. The run-off is artificially controlled by a dam near the outlet of Adams lake.

Discharge Measurements.—The gauge-height discharge curve is fairly well rated by well distributed meterings.

Winter Flow.—Partial ice conditions exist during winter months, but the river is seldom frozen over at the gauge sufficiently to have material effect on the accuracy of returns.

Accuracy.—The accuracy of returns on the whole is fairly high, the only possibility of error being in the gauge heights, sudden changes in which, owing to the opening and closing of the Adams River Lumber Company's dam may have escaped the observer's notice. This error will be entirely overcome in 1915.



Adams Lake.

Photograph by Eyre M. Dann.

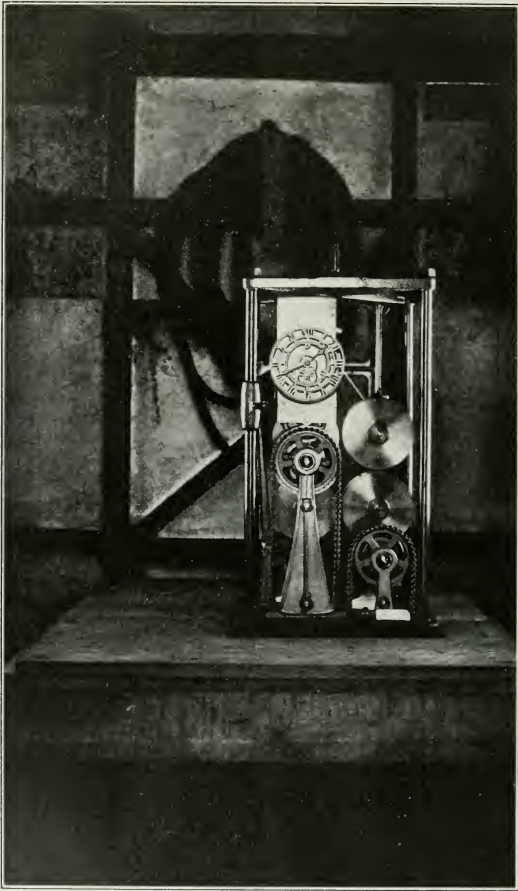
Looking north from the south end of Adams lake, which forms a splendid natural reservoir site for a possible power development on Adams river. Adams lake empties into Adams river, falling 190 feet in its six-mile course to Shuswap lake.



Adams River—Automatic Gauge House.

Photograph by Eyré M. Dann.

The gauge house is of timber construction and is covered by galvanized iron sheeting for fire protection. The well lining is an Ingot iron culvert (24 inch diameter) in which the float and weights operate. The culvert stands in the middle of a timber and rock-fill cribbing upon which the house is built. A 2½ inch cast iron feed pipe to the bottom of the river, keeps the water in the well constantly at the same elevation as the river. Although zero weather occurred during the winter, the temperatures in the well was never low enough to cause the water to freeze.



Adams River—Automatic Water Stage Register.

Photograph by Eyre M. Dann.

The Gurley Automatic Gauge shown in this photograph is so well known to engineers as to require little explanation. A float suspended from a copper ribbon passes over a drum which indicates the height of water surface. The clock and paper winding apparatus are actuated by weights, and the time and gauge height (to hundredths of feet) are printed every fifteen minutes. The gauge and clock will run without attention for thirty days.

SESSIONAL PAPER No. 25e

DISCHARGE MEASUREMENTS of Adams River near Adams Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| July 3..... | E. H. Tredroft..... | 1,923 | 443.0 | 2,354.0 | 2.41 | 4.7 | 5,650.0 |

Station rated 1911 and 1912. Gauge height in terms of newly installed automatic gauge, 5-41.

DAILY GAUGE HEIGHT AND DISCHARGE of Adams River near Adams River Lumber Co's. Dam, for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2.25 | 1,060 | 2.55 | 1,282 | 2.66 | 1,368 | 4.30 | 3,370 | 4.20 | 3,175 | 5.01 | 5,139 |
| 2..... | 2.25 | 1,060 | 2.55 | 1,282 | 2.66 | 1,368 | 4.30 | 3,370 | 4.20 | 3,175 | 5.11 | 5,430 |
| 3..... | 2.25 | 1,060 | 2.55 | 1,282 | 2.55 | 1,282 | 4.30 | 3,370 | 4.30 | 3,370 | 5.11 | 5,430 |
| 4..... | 2.25 | 1,060 | 2.55 | 1,282 | 2.55 | 1,282 | 4.40 | 3,575 | 4.30 | 3,370 | 5.11 | 5,430 |
| 5..... | 2.25 | 1,060 | 2.45 | 1,207 | 2.55 | 1,282 | 4.40 | 3,575 | 4.30 | 3,370 | 5.11 | 5,430 |
| 6..... | 2.25 | 1,060 | 2.45 | 1,207 | 2.55 | 1,282 | 4.40 | 3,575 | 4.40 | 3,575 | 5.11 | 5,430 |
| 7..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 4.40 | 3,575 | 4.40 | 3,575 | 5.21 | 5,730 |
| 8..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 4.50 | 3,810 | 4.40 | 3,575 | 5.21 | 5,730 |
| 9..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 4.50 | 3,810 | 4.40 | 3,575 | 5.21 | 5,730 |
| 10..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 4.50 | 3,810 | 4.50 | 3,810 | 5.21 | 5,730 |
| 11..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 4.50 | 3,810 | 4.50 | 3,810 | 5.21 | 5,730 |
| 12..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 4.50 | 3,810 | 4.50 | 3,810 | 5.21 | 5,730 |
| 13..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 1.84 | 786 | 4.60 | 4,050 | 5.21 | 5,730 |
| 14..... | 2.15 | 990 | 2.45 | 1,207 | 2.55 | 1,282 | 1.84 | 786 | 4.60 | 4,050 | 5.21 | 5,730 |
| 15..... | 3.07 | 1,704 | 2.45 | 1,207 | 2.55 | 1,282 | 1.84 | 786 | 4.60 | 4,050 | 5.31 | 6,030 |
| 16..... | 3.07 | 1,704 | 2.45 | 1,207 | 0.15 | 105 | 1.84 | 786 | 4.60 | 4,050 | 5.31 | 6,030 |
| 17..... | 3.07 | 1,704 | 2.66 | 1,368 | 0.15 | 105 | 1.95 | 857 | 4.70 | 4,300 | 5.31 | 6,030 |
| 18..... | 3.07 | 1,704 | 2.66 | 1,368 | 0.15 | 105 | 1.95 | 857 | 4.81 | 4,587 | 5.31 | 6,030 |
| 19..... | 2.96 | 1,611 | 2.66 | 1,368 | 0.15 | 105 | 1.95 | 857 | 4.81 | 4,587 | 5.31 | 6,030 |
| 20..... | 2.96 | 1,611 | 2.66 | 1,368 | 0.25 | 125 | 2.05 | 922 | 4.91 | 4,858 | 5.31 | 6,030 |
| 21..... | 2.96 | 1,611 | 2.66 | 1,368 | 0.25 | 125 | 4.30 | 3,370 | 4.91 | 4,858 | 5.31 | 6,030 |
| 22..... | 2.86 | 1,528 | 2.66 | 1,368 | 0.25 | 125 | 4.30 | 3,370 | 5.01 | 5,139 | 5.31 | 6,030 |
| 23..... | 2.86 | 1,528 | 2.66 | 1,368 | 0.25 | 125 | 4.30 | 3,370 | 5.01 | 5,139 | 5.41 | 6,330 |
| 24..... | 2.86 | 1,528 | 2.66 | 1,368 | 0.25 | 125 | 4.20 | 3,175 | 5.11 | 5,430 | 5.41 | 6,330 |
| 25..... | 2.86 | 1,528 | 2.66 | 1,368 | 0.25 | 125 | 4.20 | 3,175 | 5.11 | 5,430 | 5.41 | 6,330 |
| 26..... | 2.86 | 1,528 | 2.66 | 1,368 | 0.25 | 125 | 4.20 | 3,175 | 5.11 | 5,430 | 5.41 | 6,330 |
| 27..... | 2.86 | 1,528 | 2.66 | 1,368 | 0.25 | 125 | 4.20 | 3,175 | 5.31 | 6,030 | 5.41 | 6,330 |
| 28..... | 2.65 | 1,360 | 2.66 | 1,368 | 0.35 | 145 | 4.10 | 3,000 | 5.31 | 6,030 | 5.41 | 6,330 |
| 29..... | 2.65 | 1,360 | ..... | ..... | 0.35 | 145 | 4.10 | 3,000 | 5.21 | 5,730 | 5.41 | 6,330 |
| 30..... | 2.65 | 1,360 | ..... | ..... | 0.35 | 145 | 4.20 | 3,175 | 5.11 | 5,430 | 5.41 | 6,330 |
| 31..... | 2.65 | 1,360 | ..... | ..... | 0.35 | 145 | ..... | ..... | 5.01 | 5,139 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Adams River near Adams River Lumber Co's. Dam, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5-41 | 6,330 | 3-59 | 2,248 | | 4,830 | | 962 | 4-19 | 3,157 | 2-71 | 1,408 |
| 2 | 5-41 | 6,330 | 3-59 | 2,248 | | 4,830 | | 962 | 4-16 | 3,105 | 2-70 | 1,400 |
| 3 | 5-31 | 6,030 | 3-59 | 2,248 | | 4,830 | | 1,025 | 3-53 | 2,176 | 2-69 | 1,392 |
| 4 | 5-31 | 6,030 | 3-59 | 2,248 | | 4,830 | | 1,025 | 3-69 | 2,373 | 2-69 | 1,392 |
| 5 | 5-31 | 6,030 | 3-59 | 2,249 | | 4,830 | 2-30 | 1,095 | 3-81 | 2,539 | 2-67 | 1,376 |
| 6 | 4-91 | 4,858 | 3-59 | 2,248 | | 5,110 | 2-35 | 1,132 | 4-23 | 3,233 | 2-66 | 1,368 |
| 7 | 4-91 | 4,858 | 3-59 | 2,248 | | 5,110 | 3-07 | 1,704 | 4-51 | 3,834 | 2-64 | 1,352 |
| 8 | 4-91 | 4,858 | 3-59 | 2,248 | | 5,110 | 3-76 | 2,469 | 3-89 | 2,656 | 2-62 | 1,336 |
| 9 | 4-91 | 4,858 | 3-59 | 2,248 | | 5,110 | 2-35 | 1,132 | 4-20 | 3,175 | 2-60 | 1,320 |
| 10 | 5-01 | 5,139 | | | | 5,110 | 2-3 | 1,095 | 3-92 | 2,702 | 2-57 | 1,297 |
| 11 | 5-01 | 5,139 | | | | 5,110 | 1-44 | 570 | 3-91 | 2,686 | 2-55 | 1,282 |
| 12 | 5-01 | 5,139 | | | | 5,110 | 4-50 | 3,810 | 3-86 | 2,612 | 2-52 | 1,260 |
| 13 | 5-01 | 5,139 | | | 5-01 | 5,139 | 4-30 | 3,370 | 3-83 | 2,568 | 2-51 | 1,252 |
| 14 | 5-01 | 5,139 | | | | 2,176 | 4-30 | 3,370 | 3-83 | 1,940 | 2-49 | 1,237 |
| 15 | 5-01 | 5,139 | | | 2-12 | 969 | 3-90 | 2,670 | 2-93 | 1,585 | 2-47 | 1,222 |
| 16 | 5-01 | 5,139 | | | | | 3-80 | 2,525 | 2-92 | 1,577 | 2-45 | 1,207 |
| 17 | 5-01 | 5,139 | | | | | 3-84 | 2,583 | 2-90 | 1,560 | 2-43 | 1,192 |
| 18 | 5-01 | 5,139 | | | | | 3-84 | 2,583 | 2-46 | 1,215 | 2-41 | 1,177 |
| 19 | 5-01 | 5,139 | | | | | 3-83 | 2,568 | 2-85 | 1,520 | 2-39 | 1,162 |
| 20 | 5-01 | 5,139 | | | | | 3-81 | 2,539 | 2-84 | 1,512 | 2-37 | 1,147 |
| 21 | 3-48 | 2,116 | | | | | 3-81 | 2,539 | 2-84 | 1,512 | 2-35 | 1,132 |
| 22 | 3-48 | 2,116 | | | | | 3-78 | 2,497 | 2-82 | 1,496 | 2-33 | 1,117 |
| 23 | 3-48 | 2,116 | | | | | 3-77 | 2,483 | 2-80 | 1,480 | 2-31 | 1,102 |
| 24 | 3-48 | 2,116 | | | | | 3-59 | 2,248 | 2-78 | 1,464 | 2-29 | 1,088 |
| 25 | 3-48 | 2,116 | 4-70 | 4,300 | | | | 2,260 | 2-76 | 1,448 | 2-27 | 1,074 |
| 26 | 3-48 | 2,116 | | 4,560 | | | | 2,260 | 2-77 | 1,456 | 2-25 | 1,060 |
| 27 | 3-48 | 2,116 | | 4,560 | | | 3-65 | 2,322 | 2-76 | 1,448 | 2-23 | 1,046 |
| 28 | 3-48 | 2,116 | | 4,560 | | | 4-11 | 3,017 | 2-74 | 1,432 | 2-20 | 1,025 |
| 29 | 3-48 | 2,116 | | 4,560 | | | 3-54 | 2,188 | 2-73 | 1,424 | 2-15 | 990 |
| 30 | 3-48 | 2,116 | | 4,560 | | | 4-32 | 3,410 | 2-72 | 1,416 | 2-13 | 976 |
| 31 | 3-59 | 2,248 | | 4,560 | | | 4-23 | 3,232 | | | | |

MONTHLY DISCHARGE of Adams River near Adams Lake, for 1914.

(Drainage area, 1,600 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 1,704-0 | 990-0 | 1,307-0 | 0-81 | 0-94 | 80,402-0 |
| February | 1,368-0 | 1,207-0 | 1,287-0 | 0-80 | 0-83 | 71,458-0 |
| March | 1,368-0 | 105-0 | 690-0 | 0-43 | 0-50 | 42,451-0 |
| April | 3,810-0 | 786-0 | 2,736-0 | 1-71 | 1-90 | 162,804-0 |
| May | 6,030-0 | 3,175-0 | 4,403-0 | 2-75 | 3-17 | 270,700-0 |
| June | 6,330-0 | 5,139-0 | 5,900-0 | 3-68 | 4-11 | 351,074-0 |
| July | 6,330-0 | 2,116-0 | 4,197-0 | 2-62 | 3-02 | 258,062-0 |
| October | 3,810-0 | 570-0 | 2,182-0 | 1-36 | 1-57 | 134,164-0 |
| November | 3,834-0 | 1,215-0 | 2,077-0 | 1-29 | 1-44 | 123,590-0 |
| December | 1,408-0 | 976-0 | 1,213-0 | 0-75 | 0-87 | 74,580-0 |
| The period | 6,330-0 | 105-0 | 2,599-2 | 1-62 | 18-35 | 1,569,285-0 |

NOTE.—Summary is for a ten-month period, omitting August and September, for which time it was impossible to procure a gauge reader.

Precipitation over the Adams river drainage area probably varies from 20 to 40 inches per annum, while large evaporation losses occur on Adams lake.

SESSIONAL PAPER No. 25e

ASHNOLA RIVER, NEAR KEREMEOS (2065).

Location.—Near Ashnola, Water District No. 4.

Records Available.—June 27 to December 19, 1914.

Drainage Area.—Four hundred and eighty square miles.

Gauge.—Standard chain gauge read daily by H. Atherton.

Channel.—The channel is straight for about 100 yards above and below measuring section. Velocity is fairly high. The bed of the stream is composed of rocks and gravel. Only one channel at all stages. Average depth at high water, 5 feet.

Discharge Measurements.—Are made by wading at low water and by cable carrier at high water.

Winter Flow.—No records have been kept during winter months, but ice conditions are known to exist during January and February.

Accuracy.—The accuracy of returns is low, only three measurements having been obtained and these at low water.

ASHNOLA RIVER.

Ashnola river is the largest tributary of the Similkameen below Princeton. It rises in the high mountains of the Cascade range south of the boundary, and joins the Similkameen at Ashnola half-way between Hedley and Keremeos, and has a total length of about 40 miles. It has a number of small tributaries from the surrounding mountains, the largest of which is the East Fork from the south, which joins it 5 miles from the mouth. The other tributaries, six in number, are small unnamed creeks.

The drainage area from the 1912 map of the Department of Lands of British Columbia is 480 square miles.

The river and its tributaries flow through deep narrow valleys with steep slopes on both sides, like all streams in this district. Little is known of the headwaters of this river, as the upper part of its course is difficult of access.

The precipitation at the mouth is about 10 inches per annum. Water is taken from Ashnola river by the South Keremeos Land Company for use on the ranches in the neighbourhood of Keremeos, 10 miles away on the north side of the Similkameen river. The water runs in an earth ditch most of the way. It crosses the Similkameen at Ashnola in a 40-inch wood stave pipe supported on the highway bridge at this point. Ashnola river at low stages carries more than this system can carry. Discharge records of the river taken by this survey in 1914 show a minimum flow of 65 c.f.s. on August 25. The maximum flow is over 1000 c.f.s. With storage there is sufficient water in the river to irrigate large areas of land in the Similkameen valley below Keremeos.

DISCHARGE MEASUREMENTS of Ashnola river near Ashnola, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Aren of Section. | Mean Velocity | Gauge Height. | Discharge. |
|----------|----------------|-----------|--------|------------------|---------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft per sec | Feet | Sec-ft |
| July 28. | K. G. Chisholm | 1,913 | 57.0 | 111.0 | 1.73 | -0.10 | 102.0 |
| Aug. 1. | " | 1,913 | 41.0 | 46.0 | 1.54 | -0.61 | 71.0 |
| Dec. 1. | " | 1,673 | 40.0 | 50.0 | 1.36 | -0.53 | 68.0 |

An effort will be made to completely rate this station during 1915.

DAILY GAUGE HEIGHT AND DISCHARGE of Ashnola River near Keremeos, for 1914.

| DAY. | June. | |
|---------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1..... | | |
| 2..... | | |
| 3..... | | |
| 4..... | | |
| 5..... | | |
| 6..... | | |
| 7..... | | |
| 8..... | | |
| 9..... | | |
| 10..... | | |
| 11..... | | |
| 12..... | | |
| 13..... | | |
| 14..... | | |
| 15..... | | |
| 16..... | | |
| 17..... | | |
| 18..... | | |
| 19..... | | |
| 20..... | | |
| 21..... | | |
| 22..... | | |
| 23..... | | |
| 24..... | | |
| 25..... | | |
| 26..... | | |
| 27..... | 1-50 | 876 |
| 28..... | | |
| 29..... | | |
| 30..... | 1-60 | 925 |
| 31..... | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Ashnola River near Keremeos, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November | | December. | |
|---------|--------------|------------|--------------|-----------|---------------|-----------|--------------|-----------|---------------|------------|---------------|------------|
| | Gauge Height | Discharge. | Gauge Height | Discharge | Gauge Height. | Discharge | Gauge Height | Discharge | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | -0.35 | 119 | -0.7 | 49 | -0.2 | 160 | | | -0.6 | 65 |
| 2..... | 1.50 | 876 | | | -0.7 | 49 | -0.27 | 140 | -0.32 | 127 | -0.55 | 74 |
| 3..... | | | | | | | | | | | | |
| 4..... | 1.40 | 828 | -0.35 | 119 | | | | | | | | |
| 5..... | | | | | -0.7 | 49 | | | -0.30 | 132 | -0.40 | 107 |
| 6..... | | | -0.35 | 119 | | | -0.25 | 146 | | | | |
| 7..... | 1.25 | 757 | | | | | | | -0.30 | 132 | | |
| 8..... | | | -0.35 | 119 | -0.5 | 84 | -0.25 | 146 | | | -0.30 | 132 |
| 9..... | 09.5 | 620 | | | | | | | | | | |
| 10..... | | | | | -0.4 | 107 | -0.30 | 132 | -0.35 | 119 | -0.25 | 146 |
| 11..... | 0.85 | 576 | -0.40 | 107 | | | | | -0.40 | 107 | -0.15 | 176 |
| 12..... | | | | | -0.45 | 95 | | | | | | |
| 13..... | | | -0.45 | 95 | | | -0.20 | 160 | | | | |
| 14..... | 1.05 | 665 | | | | | | | -0.45 | 95 | | |
| 15..... | | | -0.40 | 107 | -0.45 | 95 | -0.12 | 156 | | | -0.10 | 263 |
| 16..... | 0.90 | 598 | | | | | | | | | | |
| 17..... | | | | | -0.45 | 95 | -0.15 | 176 | -0.45 | 95 | +0.20 | 301 |
| 18..... | 0.55 | 446 | -0.35 | 119 | | | | | | | | |
| 19..... | | | -0.45 | 95 | -0.05 | 84 | | | -0.45 | 95 | +0.30 | 340 |
| 20..... | | | | | | | -0.25 | 146 | | | | |
| 21..... | 0.35 | 361 | | | | | | | -0.30 | 132 | | |
| 22..... | | | -0.50 | 84 | -0.12 | 156 | -0.30 | 132 | | | | |
| 23..... | 0.22 | 308 | | | | | | | | | | |
| 24..... | | | | | -0.20 | 160 | -0.30 | 132 | -0.40 | 107 | | |
| 25..... | 0.15 | 282 | -0.60 | 65 | | | | | | | | |
| 26..... | | | | | -0.30 | 132 | | | -0.40 | 107 | | |
| 27..... | | | -0.65 | 57 | | | -0.25 | 146 | | | | |
| 28..... | 0.05 | 244 | | | | | | | -0.45 | 95 | | |
| 29..... | | | -0.60 | 65 | -0.15 | 176 | -0.25 | 146 | | | | |
| 30..... | 0 | 226 | | | | | | | | | | |
| 31..... | | | | | | | -0.30 | 132 | | | | |

MONTHLY DISCHARGE of Ashnola River near Keremeos, for 1914.

(Drainage area, 480 square miles.)

| Month | DISCHARGE IN SECOND-FEET | | | | RUN-OFF | |
|------------|--------------------------|----------|------------|-----------------|----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage-area | Total in acre-feet |
| | | | | | June 27 to June 30 | Dec 1 to Dec 19 |
| June | 925 | 876 | for period | June 27 to | June 30 | |
| July | 876 | 226 | 522 | 1.1 | 1.3 | 62,067 |
| August | 119 | 57 | 97.7 | 0.2 | 0.2 | 6,082 |
| September | 186 | 49 | 104.3 | 0.2 | 0.2 | 6,206 |
| October | 186 | 132 | 148.6 | 3.3 | 0.3 | 9,117 |
| November | 142 | 95 | 111.9 | 0.2 | 0.2 | 6,868 |
| December | 340 | 55 | for period | Dec 1 to | Dec 19 | |
| The period | 876 | 49 | 196.9 | 0.4 | 2.2 | 60,085 |

NOTE.—Station established in latter end of June, 1914

BOUNDARY CREEK (2048).

Location.—At Greenwood, Water District No. 4.

Records Available.—January 1 to December 7, 1914.

Drainage Area.—One hundred and twenty-five square miles.

Gauge.—Vertical staff gauge graduated in feet and tenths, situated on upstream side of traffic bridge, read daily by P. H. McCarrach.

Channel.—Channel is straight for about 300 feet above and below measuring section. Bed of stream is rocky and permanent.

Discharge Measurements.—Four discharge measurements have been obtained during 1914 at varying stages.

Winter Flow.—No records have been kept on this stream during winter months, but ice conditions are known to exist during January and February.

Accuracy.—The accuracy of results is considered good, and should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Boundary Creek at Greenwood, B.C., 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|-------------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 20..... | C. E. Richardson and C. Varcoe..... | 1527 | 41.5 | 99.8 | 3.8 | 2.9 | 379 |
| June 8..... | E. M. Dann and K. Chisholm | 1913 | 39.0 | 84.0 | 3.2 | 2.5 | 269 |
| July 20..... | " " " | 1913 | 39.0 | 41.0 | 1.28 | 1.21 | 52.6 |
| Aug. 26..... | " " " | 1913 | 17.0 | 15.6 | 0.77 | 0.77 | 12.0 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Boundary Creek near Greenwood,
for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 0-90 | 20 | 0-90 | 20 | 0-90 | 20 | 1-20 | 45 | 2-90 | 380 | 2-80 | 352 |
| 2..... | 0-90 | 20 | ..... | ..... | 0-90 | 20 | 1-20 | 45 | 3-35 | 504 | 2-90 | 380 |
| 3..... | 0-90 | 20 | ..... | ..... | 0-90 | 20 | 1-30 | 55 | 3-50 | 546 | 3-30 | 491 |
| 4..... | 0-90 | 20 | ..... | ..... | 0-90 | 20 | 1-40 | 66 | 3-30 | 491 | 3-00 | 407 |
| 5..... | 0-90 | 20 | ..... | ..... | 0-90 | 20 | 1-50 | 78 | 3-20 | 463 | 3-00 | 407 |
| 6..... | 0-90 | 20 | ..... | ..... | 0-90 | 20 | 1-60 | 90 | 3-00 | 407 | 2-80 | 352 |
| 7..... | 1-00 | 28 | ..... | ..... | 0-90 | 20 | 1-80 | 117 | 2-90 | 380 | 2-70 | 325 |
| 8..... | 1-00 | 28 | ..... | ..... | 0-90 | 20 | 2-00 | 150 | 2-90 | 380 | 2-60 | 297 |
| 9..... | 1-00 | 28 | ..... | ..... | 0-90 | 20 | 2-10 | 170 | 3-00 | 407 | 2-60 | 297 |
| 10..... | 1-00 | 28 | ..... | ..... | 0-90 | 20 | 2-25 | 204 | 3-00 | 407 | 2-50 | 270 |
| 11..... | 0-95 | 24 | ..... | ..... | 0-90 | 20 | 2-60 | 297 | 3-00 | 407 | 2-50 | 270 |
| 12..... | 0-90 | 20 | 0-90 | 20 | 0-90 | 20 | 2-80 | 352 | 3-10 | 435 | 2-40 | 243 |
| 13..... | 0-90 | 20 | 0-90 | 20 | 0-90 | 20 | 2-90 | 380 | 3-15 | 449 | 2-40 | 243 |
| 14..... | 0-90 | 20 | 0-90 | 20 | 0-95 | 24 | 3-00 | 407 | 3-20 | 463 | 2-50 | 270 |
| 15..... | 0-90 | 20 | 0-90 | 20 | 0-95 | 24 | 3-40 | 518 | 3-40 | 518 | 2-60 | 297 |
| 16..... | 0-90 | 20 | 0-90 | 20 | 1-00 | 28 | 3-45 | 532 | 3-55 | 559 | 2-70 | 325 |
| 17..... | 0-90 | 20 | 0-90 | 20 | 1-00 | 28 | 3-55 | 562 | 3-20 | 463 | 2-80 | 352 |
| 18..... | 0-90 | 20 | 0-90 | 20 | 1-00 | 28 | 3-40 | 518 | 3-00 | 407 | 2-80 | 352 |
| 19..... | 0-90 | 20 | 0-90 | 20 | 1-00 | 28 | 3-40 | 518 | 3-00 | 407 | 2-70 | 325 |
| 20..... | 0-90 | 20 | 0-90 | 20 | 1-10 | 36 | 3-50 | 546 | 3-00 | 407 | 2-50 | 270 |
| 21..... | 0-90 | 20 | 0-90 | 20 | 1-10 | 36 | 3-30 | 491 | 3-00 | 407 | 2-40 | 243 |
| 22..... | 0-90 | 20 | 0-90 | 20 | 1-10 | 36 | 3-20 | 463 | 3-00 | 407 | 2-30 | 217 |
| 23..... | 0-90 | 20 | 0-90 | 20 | 1-10 | 36 | 3-20 | 463 | 3-30 | 491 | 2-10 | 170 |
| 24..... | 1-00 | 28 | 0-90 | 20 | 1-20 | 45 | 3-30 | 491 | 3-30 | 491 | 2-10 | 170 |
| 25..... | 0-90 | 20 | 0-90 | 20 | 1-20 | 45 | 3-20 | 463 | 3-30 | 491 | 2-10 | 170 |
| 26..... | 0-90 | 20 | 0-90 | 20 | 1-15 | 40 | 3-10 | 435 | 2-95 | 394 | 2-00 | 150 |
| 27..... | 0-90 | 20 | 0-90 | 20 | 1-20 | 45 | 3-10 | 435 | 2-90 | 380 | 2-00 | 150 |
| 28..... | 0-90 | 20 | 0-90 | 20 | 1-20 | 45 | 3-00 | 407 | 2-80 | 352 | 1-90 | 133 |
| 29..... | 0-90 | 20 | ..... | ..... | 1-20 | 45 | 2-90 | 380 | 2-70 | 325 | 1-90 | 133 |
| 30..... | 0-90 | 20 | ..... | ..... | 1-20 | 45 | 2-90 | 380 | 2-70 | 325 | 1-90 | 133 |
| 31..... | 0-90 | 20 | ..... | ..... | 1-20 | 45 | ..... | ..... | 2-70 | 325 | ..... | ..... |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE OF Boundary Creek near Greenwood, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|--------------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | ⁴ Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-90 | 133 | 1-00 | 28 | 0-40 | 2 | 0-90 | 20 | 1-15 | 40 | 1-10 | 36 |
| 2..... | 1-80 | 117 | 1-00 | 28 | 0-40 | 2 | 0-85 | 17 | 1-15 | 40 | 1-10 | 36 |
| 3..... | 1-90 | 133 | 1-00 | 28 | 0-40 | 2 | 0-85 | 17 | 1-20 | 45 | 1-01 | 36 |
| 4..... | 1-80 | 117 | 0-90 | 20 | 0-40 | 2 | 0-85 | 17 | 1-20 | 45 | 1-10 | 36 |
| 5..... | 1-70 | 103 | 0-90 | 20 | 0-40 | 2 | 0-85 | 17 | 1-20 | 45 | 1-05 | 32 |
| 6..... | 1-70 | 103 | 0-90 | 20 | 0-40 | 2 | 0-80 | 14 | 1-20 | 45 | 1-05 | 32 |
| 7..... | 1-60 | 90 | 0-90 | 20 | 0-40 | 2 | 0-80 | 14 | 1-20 | 45 | 1-65 | 32 |
| 8..... | 1-60 | 90 | 0-90 | 20 | 0-60 | 5 | 0-80 | 14 | 1-20 | 45 | ..... | ..... |
| 9..... | 1-50 | 78 | 0-90 | 20 | 0-60 | 5 | 0-80 | 14 | 1-20 | 45 | ..... | ..... |
| 10..... | 1-50 | 78 | 0-90 | 20 | 0-60 | 5 | 0-80 | 14 | 1-15 | 40 | ..... | ..... |
| 11..... | 1-40 | 66 | 0-80 | 14 | 0-60 | 5 | 0-90 | 20 | 1-10 | 36 | ..... | ..... |
| 12..... | 1-40 | 66 | 0-80 | 14 | 0-50 | 3 | 0-90 | 20 | 1-10 | 36 | ..... | ..... |
| 13..... | 1-40 | 66 | 0-80 | 14 | 0-50 | 3 | 0-90 | 20 | 1-20 | 45 | ..... | ..... |
| 14..... | 1-46 | 66 | 0-80 | 14 | 0-55 | 4 | 0-90 | 20 | 1-20 | 45 | ..... | ..... |
| 15..... | 1-40 | 66 | 0-80 | 14 | 0-70 | 9 | 0-90 | 20 | 1-20 | 45 | ..... | ..... |
| 16..... | 1-30 | 55 | 0-80 | 14 | 0-70 | 9 | 0-90 | 20 | 1-15 | 40 | ..... | ..... |
| 17..... | 1-30 | 55 | 0-80 | 14 | 0-70 | 9 | 0-95 | 24 | 1-15 | 40 | ..... | ..... |
| 18..... | 1-25 | 50 | 0-70 | 9 | 0-70 | 9 | 1-00 | 28 | 1-15 | 40 | ..... | ..... |
| 19..... | 1-20 | 45 | 0-70 | 9 | 0-75 | 11 | 1-00 | 28 | 1-20 | 45 | ..... | ..... |
| 20..... | 1-20 | 45 | 0-70 | 9 | 0-80 | 14 | 1-00 | 28 | 1-20 | 45 | ..... | ..... |
| 21..... | 1-20 | 45 | 0-70 | 9 | 0-80 | 14 | 1-00 | 28 | 1-20 | 45 | ..... | ..... |
| 22..... | 1-20 | 45 | 0-70 | 9 | 0-80 | 14 | 1-00 | 28 | 1-20 | 45 | ..... | ..... |
| 23..... | 1-20 | 45 | 0-60 | 5 | 0-80 | 14 | 1-00 | 28 | 1-20 | 45 | ..... | ..... |
| 24..... | 1-20 | 45 | 0-60 | 5 | 0-80 | 14 | 1-00 | 28 | 1-15 | 40 | ..... | ..... |
| 25..... | 1-20 | 45 | 0-60 | 5 | 0-70 | 9 | 1-00 | 28 | 1-15 | 40 | ..... | ..... |
| 26..... | 1-16 | 36 | 0-60 | 5 | 0-70 | 9 | 1-00 | 28 | 1-15 | 40 | ..... | ..... |
| 27..... | 1-10 | 36 | 0-50 | 3 | 0-90 | 20 | 1-00 | 28 | 1-15 | 40 | ..... | ..... |
| 28..... | 1-10 | 36 | 0-50 | 3 | 1-00 | 28 | 1-05 | 32 | 1-15 | 40 | ..... | ..... |
| 29..... | 1-00 | 28 | 0-50 | 3 | 0-95 | 24 | 1-05 | 32 | 1-15 | 40 | ..... | ..... |
| 30..... | 1-00 | 28 | 0-50 | 3 | 0-90 | 20 | 1-10 | 36 | 1-15 | 40 | ..... | ..... |
| 31..... | 1-00 | 28 | 0-50 | 3 | ..... | ..... | 1-15 | 40 | ..... | ..... | ..... | ..... |

MONTHLY DISCHARGE OF Boundary Creek near Greenwood, for 1914.

(Drainage area, 125 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|--------------------------------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| January..... | 28 | 20 | 21.4 | 0-17 | 0-19 | 1,316 |
| February..... | 20 | 20 | 20.0 | 0-16 | 0-17 | 1,111 |
| March..... | 45 | 20 | 29.7 | 0-24 | 0-28 | 1,826 |
| April..... | 560 | 45 | 335.2 | 2-68 | 2-99 | 19,946 |
| May..... | 559 | 325 | 428 | 3-4 | 3-9 | 26,317 |
| June..... | 491 | 133 | 273 | 2-18 | 2-43 | 16,245 |
| July..... | 133 | 28 | 66 | 0-53 | 0-61 | 4,058 |
| August..... | 28 | 3 | 13 | 0-10 | 0-11 | 799 |
| September..... | 28 | 2 | 9 | 0-07 | 0-08 | 535 |
| October..... | 40 | 14 | 23 | 0-18 | 0-21 | 1,414 |
| November..... | 45 | 36 | 42 | 0-33 | 0-37 | 2,499 |
| December..... | 36 | 32 | (For period Dec. 1 to Dec. 7.) | ..... | ..... | ..... |
| The year..... | 560 | 2 | 107 | 0-84 (estimated) | 11-6 | 78,000 (estimated) |

NOTE.—Winter conditions obtained after December 7.

From October 1, 1912, to September 30, 1913, precipitation at Greenwood was 14.7 inches. This is probably somewhat lower than the mean annual precipitation over the whole drainage area.

SESSIONAL PAPER No. 25e

CELESTE CREEK (2050).

Location.—Near Albas, Water District No. 2.*Drainage Area.*—Eighty square miles.*Records Available.*—March 1 to December 31, 1914.*Gauge.*—Standard vertical staff gauge, graduated in feet and tenths. Read by H. C. Harris three times per week.*Channel.*—Average width 25 feet. Bed of stream very rocky.*Discharge Measurements.*—Two meterings only have been obtained.*Winter Flow.*—Creek generally freezes over during winter months.*Accuracy.*—The results as shown are very approximate, since it has been impossible to rate the station completely during 1914.

DISCHARGE MEASUREMENTS OF CELESTE Creek near Albas, B.C., 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|------------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Aug. 13..... | E. H. Tredroft & K. Chisholm | 1923 | 32 | 37.0 | 1.47 | 0.58 | 54.7 |
| Aug. 29..... | E. M. Dann | 1913 | 19 | 15.4 | 1.5 | 0.35 | 23.4 |

Measurements made at stream's mouth, regular section not suitable for low water.

An effort will be made to completely rate this station during 1915.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Celeste Creek, near Shuswap Lake,
for 1914.

| Day. | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0.65 | 66 | | | | | 1.95 | 335 |
| 2 | | | | | 0.70 | 75 | 1.75 | 289 | | |
| 3 | | | 0.65 | 66 | | | | | 2.15 | 382 |
| 4 | | | | | 0.75 | 83 | 1.85 | 312 | | |
| 5 | | | 0.65 | 66 | | | | | 2.15 | 382 |
| 6 | | | | | 0.75 | 83 | 1.95 | 335 | | |
| 7 | | | 0.65 | 66 | | | | | 2.05 | 359 |
| 8 | | | | | 0.80 | 92 | 1.95 | 335 | | |
| 9 | | | | | | | | | | |
| 10 | | | 0.65 | 66 | | | | | 2.10 | 370 |
| 11 | | | | | 0.85 | 101 | 2.00 | 347 | | |
| 12 | | | 0.65 | 66 | | | | | 2.05 | 359 |
| 13 | | | | | | | 2.25 | 405 | | |
| 14 | | | 0.65 | 66 | 0.95 | 120 | | | | |
| 15 | | | | | | | 2.35 | 429 | 2.05 | 359 |
| 16 | | | 0.65 | 66 | 1.00 | 130 | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | 1.15 | 160 | 2.35 | 429 | 2.10 | 370 |
| 19 | | | 0.65 | 66 | | | | | | |
| 20 | | | | | 1.25 | 181 | 2.35 | 429 | 2.00 | 347 |
| 21 | | | 0.65 | 66 | | | | | | |
| 22 | 0.65 | 66 | | | 1.30 | 191 | | | | |
| 23 | | | 0.65 | 66 | | | 2.25 | 405 | 1.90 | 324 |
| 24 | | | | | 1.80 | 300 | | | | |
| 25 | 0.65 | 66 | | | | | 2.25 | 405 | | |
| 26 | | | 0.65 | 66 | | | | | 1.80 | 300 |
| 27 | | | | | 1.65 | 267 | | | | |
| 28 | 0.65 | 66 | 0.65 | 66 | | | 2.15 | 382 | | |
| 29 | | | | | | | | | | |
| 30 | | | | | 1.65 | 267 | 2.15 | 382 | 1.80 | 300 |
| 31 | | | 0.70 | 75 | | | | | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Celeste Creek, near Shuswap Lake, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | | 0-30 | 18 | 0-50 | 43 | 1-00 | 120 | 0-85 | 101 |
| 2 | | | | | | | | | | | | |
| 3 | 1-70 | 278 | 0-70 | 75 | | | | | | | | |
| 4 | | | | | 0-27 | 15 | | | 1-10 | 150 | 0-85 | 101 |
| 5 | | | 0-70 | 75 | | | 0-50 | 43 | | | | |
| 6 | 1-55 | 245 | | | 0-25 | 13 | | | 1-05 | 140 | | |
| 7 | | | 0-65 | 66 | | | 0-50 | 43 | | | 0-85 | 101 |
| 8 | | | | | 0-30 | 18 | | | 1-05 | 140 | | |
| 9 | 1-35 | 202 | 0-65 | 66 | | | 0-50 | 43 | | | 0-85 | 101 |
| 10 | | | | | | | | | 1-00 | 130 | | |
| 11 | 1-25 | 181 | | | 0-22 | 10 | 0-60 | 58 | | | 0-80 | 92 |
| 12 | | | 0-65 | 66 | | | | | 1-00 | 130 | | |
| 13 | 1-15 | 160 | | | | | 0-70 | 75 | | | 0-75 | 83 |
| 14 | | | 0-65 | 66 | 0-20 | 9 | | | 1-00 | 130 | | |
| 15 | 1-30 | 191 | | | | | 0-90 | 110 | | | 0-70 | 75 |
| 16 | | | 0-55 | 50 | | | | | 0-95 | 120 | | |
| 17 | | | | | 0-20 | 9 | 1-00 | 130 | | | 0-70 | 75 |
| 18 | 1-20 | 170 | 0-50 | 43 | | | | | 0-90 | 110 | | |
| 19 | | | | | 0-25 | 12 | 1-10 | 150 | | | 0-65 | 66 |
| 20 | | | | | | | | | 0-85 | 101 | | |
| 21 | 1-10 | 150 | 0-50 | 43 | 0-30 | 18 | 1-05 | 140 | | | | |
| 22 | | | | | | | | | 0-80 | 92 | 0-65 | 66 |
| 23 | 1-00 | 130 | | | 0-35 | 23 | 1-00 | 130 | | | | |
| 24 | | | 0-45 | 36 | | | | | 0-75 | 83 | 0-60 | 58 |
| 25 | 0-95 | 120 | | | | | | | | | | |
| 26 | | | | | 0-40 | 29 | 1-00 | 130 | 0-75 | 83 | 0-60 | 58 |
| 27 | 0-90 | 110 | 0-35 | 23 | | | | | | | | |
| 28 | | | | | 0-45 | 36 | 0-95 | 120 | 0-70 | 75 | 0-60 | 58 |
| 29 | | | 0-35 | 23 | | | | | | | | |
| 30 | 0-80 | 92 | | | 0-45 | 36 | 0-90 | 110 | 0-80 | 92 | 0-60 | 58 |
| 31 | | | 0-30 | 18 | | | | | | | | |

MONTHLY DISCHARGE of Celeste Creek near Shuswap Lake, for 1914.

(Drainage area, 80 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|-----------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area. | Total in acre feet |
| | | | | | | |
| March | 75 | 66 | 66-6 | 0-8 | 0-9 | 4,095 |
| April | 300 | 75 | 157-7 | 1-9 | 2-1 | 2,384 |
| May | 420 | 289 | 375-7 | 4-7 | 5-4 | 23,100 |
| June | 382 | 300 | 340-0 | 4-3 | 4-8 | 20,767 |
| July | 278 | 92 | 169-0 | 2-1 | 2-4 | 10,891 |
| August | 75 | 18 | 50-0 | 0-6 | 0-7 | 3,074 |
| September | 36 | 9 | 19-0 | 0-2 | 0-2 | 1,130 |
| October | 150 | 43 | 94-6 | 1-2 | 1-4 | 5,817 |
| November | 150 | 75 | 113-7 | 1-4 | 1-6 | 6,703 |
| December | 101 | 58 | 78-0 | 1-0 | 1-1 | 4,796 |
| The period | 420 | 0 | 147-3 | 1-8 | 20-6 | 89,117 |

Note.—Mean annual precipitation probably varies from 30 to 50 inches. Probably there are large evaporation losses from Hum-a-milt lake.

CRAZY CREEK (2051).

Location.—Section 28, township 23, range 5, west of the 6th meridian.

Drainage Area.—Forty-five square miles.

Records Available.—March 8, to December 13, 1914.

Gauge.—Standard vertical staff gauge situated on C.P.R. siding bridge.

Channel.—The channel averages about 75 feet in width. Bed of stream is rocky, and velocities are high.

Winter Flow.—Ice conditions exist on this stream during November, December, January and February.

Accuracy.—The accuracy of returns is considered on the whole to be fairly high. Four discharge measurements have been obtained at varying stages, and the curve is well defined.

Miscellaneous.—The British Columbia Forest Mills Co., Ltd., hold records on this stream for 9 cubic feet per second. The water is used to run a small hydro-electric plant comprising : One Pelton bucket wheel and one Can. Gen. Electric dynamo (2,000 volts, 50 amps), replaced during winter months by steam plant for purpose of operating saw-mill.

DISCHARGE MEASUREMENTS of Crazy Creek at Taft, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|------------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Oct. 25..... | E. M. Dann and K. G. Chisholm..... | 1055 | 46 | 57.8 | 2.05 | 1.60 | 118.3 |
| 1914. | | | | | | | |
| Mar. 3..... | K. G. Chisholm..... | 1505 | 33 | 21.8 | 1.11 | 0.72 | 24.3 |
| May 18..... | E. H. Trederoft..... | 1055 | 77 | 124.7 | 3.0 | 2.30 | 370.7 |
| July 15..... | E. H. Trederoft..... | 1923 | 78.5 | 151.2 | 4.09 | 2.80 | 619.5 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Crazy Creek near Taft, B.C., for 1914.

| DAY. | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1-00 | 35 | 2-00 | 242 | 2-30 | 371 |
| 2 | | | 0-90 | 29 | 2-40 | 417 | 2-60 | 517 |
| 3 | | | 1-00 | 35 | 2-50 | 467 | 3-00 | 722 |
| 4 | | | 1-10 | 43 | 2-25 | 348 | 2-60 | 517 |
| 5 | | | 1-40 | 82 | 2-00 | 242 | 2-35 | 394 |
| 6 | | | 1-60 | 118 | 1-90 | 205 | 2-30 | 371 |
| 7 | | | 1-75 | 158 | 1-90 | 205 | 2-00 | 242 |
| 8 | 0-60 | 24 | 1-80 | 173 | 1-90 | 205 | 2-00 | 242 |
| 9 | 0-75 | 25 | 1-80 | 173 | 2-10 | 282 | 2-10 | 282 |
| 10 | 0-60 | 24 | 1-80 | 173 | 2-25 | 348 | 2-20 | 325 |
| 11 | 0-70 | 25 | 1-85 | 189 | 2-20 | 325 | 2-40 | 417 |
| 12 | 0-80 | 26 | 1-90 | 205 | 2-30 | 371 | 2-35 | 394 |
| 13 | 0-85 | 28 | 2-00 | 242 | 2-40 | 417 | 2-50 | 467 |
| 14 | 0-80 | 26 | 2-05 | 262 | 2-65 | 542 | 2-60 | 517 |
| 15 | 0-85 | 28 | 2-15 | 303 | 2-60 | 517 | 2-65 | 542 |
| 16 | 0-85 | 28 | 2-20 | 325 | 2-65 | 542 | 2-70 | 567 |
| 17 | 0-80 | 26 | 2-00 | 242 | 2-60 | 517 | 2-75 | 593 |
| 18 | 0-95 | 32 | 1-90 | 205 | 2-30 | 371 | 2-70 | 567 |
| 19 | 0-90 | 29 | 2-00 | 242 | 2-25 | 348 | 2-50 | 467 |
| 20 | 0-95 | 32 | 2-10 | 282 | 2-20 | 325 | 2-35 | 394 |
| 21 | 1-00 | 35 | 2-00 | 242 | 2-30 | 371 | 2-15 | 303 |
| 22 | 1-10 | 43 | 1-90 | 205 | 2-40 | 417 | 2-10 | 282 |
| 23 | 1-10 | 43 | 1-80 | 173 | 2-55 | 492 | 2-10 | 282 |
| 24 | 1-20 | 53 | 1-90 | 205 | 2-65 | 542 | 2-15 | 303 |
| 25 | 1-10 | 43 | 1-80 | 173 | 2-50 | 467 | 2-20 | 325 |
| 26 | 0-60 | 24 | 1-80 | 173 | 2-35 | 394 | 2-50 | 467 |
| 27 | 0-65 | 24 | 1-80 | 173 | 2-10 | 282 | 2-35 | 394 |
| 28 | 0-70 | 25 | 1-80 | 173 | 2-00 | 242 | 2-25 | 348 |
| 29 | 0-90 | 29 | 1-75 | 158 | 1-90 | 205 | 2-30 | 371 |
| 30 | 1-00 | 35 | 1-80 | 173 | 1-80 | 173 | 2-30 | 371 |
| 31 | 1-10 | 43 | | | 1-95 | 223 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE OF CRAZY CREEK NEAR TAFT, B.C., FOR 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-35 | 394 | 1-40 | 82 | 0-80 | 26 | 1-60 | 118 | 1-45 | 90 | 1-30 | 67 |
| 2 | 2-45 | 442 | 1-30 | 67 | 0-80 | 26 | 1-55 | 108 | 1-85 | 189 | 1-25 | 60 |
| 3 | 2-40 | 417 | 1-30 | 67 | 0-80 | 26 | 1-40 | 82 | 1-65 | 131 | 1-20 | 53 |
| 4 | 2-45 | 442 | 1-30 | 67 | 0-80 | 26 | 1-40 | 82 | 1-55 | 108 | 1-20 | 53 |
| 5 | 2-30 | 371 | 1-25 | 60 | 0-80 | 26 | 1-30 | 67 | 1-50 | 98 | 1-15 | 48 |
| 6 | 2-20 | 325 | 1-20 | 53 | 0-75 | 25 | 1-25 | 60 | 1-50 | 98 | 1-15 | 48 |
| 7 | 2-10 | 282 | 1-20 | 53 | 0-75 | 25 | 1-20 | 53 | 1-45 | 90 | 1-10 | 43 |
| 8 | 2-00 | 242 | 1-30 | 67 | 0-90 | 29 | 1-10 | 43 | 1-40 | 82 | 1-10 | 43 |
| 9 | 2-00 | 242 | 1-20 | 53 | 1-30 | 67 | 1-10 | 43 | 1-40 | 82 | 1-10 | 43 |
| 10 | 2-00 | 242 | 1-15 | 48 | 1-00 | 35 | 1-10 | 43 | 1-40 | 82 | 1-10 | 43 |
| 11 | 2-05 | 262 | 1-10 | 43 | 0-95 | 32 | 1-10 | 43 | 1-50 | 98 | 1-00 | 35 |
| 12 | 2-10 | 282 | 1-10 | 43 | 1-00 | 35 | 1-10 | 43 | 1-50 | 98 | 1-00 | 35 |
| 13 | 2-10 | 282 | 1-10 | 43 | 1-05 | 39 | 1-10 | 43 | 1-45 | 90 | 1-00 | 35 |
| 14 | 2-57 | 502 | 1-05 | 39 | 1-10 | 43 | 1-10 | 43 | 1-40 | 82 | ..... | ..... |
| 15 | 2-80 | 619 | 1-05 | 39 | 1-00 | 35 | 1-05 | 39 | 1-30 | 67 | ..... | ..... |
| 16 | 2-20 | 325 | 1-05 | 39 | 0-90 | 29 | 1-00 | 35 | 1-25 | 60 | ..... | ..... |
| 17 | 1-95 | 223 | 1-10 | 43 | 0-90 | 29 | 1-40 | 82 | 1-20 | 53 | ..... | ..... |
| 18 | 1-90 | 205 | 1-05 | 39 | 0-90 | 29 | 1-45 | 90 | 1-20 | 53 | ..... | ..... |
| 19 | 1-80 | 173 | 1-00 | 35 | 1-40 | 82 | 1-45 | 90 | 1-20 | 53 | ..... | ..... |
| 20 | 1-80 | 173 | 1-00 | 35 | 1-30 | 67 | 1-40 | 82 | 1-15 | 48 | ..... | ..... |
| 21 | 1-75 | 158 | 1-00 | 35 | 1-20 | 53 | 1-40 | 82 | 1-10 | 43 | ..... | ..... |
| 22 | 1-60 | 118 | 1-00 | 35 | 1-10 | 43 | 1-40 | 82 | 1-10 | 43 | ..... | ..... |
| 23 | 1-50 | 98 | 1-00 | 35 | 0-95 | 32 | 1-35 | 74 | 1-10 | 43 | ..... | ..... |
| 24 | 1-50 | 98 | 1-00 | 35 | 0-95 | 32 | 1-35 | 74 | 1-20 | 53 | ..... | ..... |
| 25 | 1-50 | 98 | 0-90 | 29 | 0-90 | 29 | 1-30 | 67 | 1-20 | 53 | ..... | ..... |
| 26 | 1-50 | 98 | 0-90 | 29 | 0-90 | 29 | 1-25 | 60 | 1-20 | 53 | ..... | ..... |
| 27 | 1-50 | 98 | 0-90 | 29 | 1-85 | 189 | 1-25 | 60 | 1-20 | 53 | ..... | ..... |
| 28 | 1-45 | 90 | 0-85 | 28 | 1-60 | 118 | 1-20 | 53 | 1-40 | 82 | ..... | ..... |
| 29 | 1-40 | 82 | 0-80 | 26 | 1-50 | 98 | 1-10 | 43 | 1-40 | 82 | ..... | ..... |
| 30 | 1-40 | 82 | 0-80 | 26 | 1-50 | 98 | 1-10 | 43 | 1-35 | 74 | ..... | ..... |
| 31 | 1-40 | 82 | 0-80 | 26 | ..... | ..... | 1-40 | 82 | ..... | ..... | ..... | ..... |

MONTHLY DISCHARGE OF CRAZY CREEK AT TAFT, B.C., FOR 1914.

(Drainage area, 45 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| March | 53 | 24 | 31-7 | 0-7 | 0-8 | 1,949 |
| April | 325 | 29 | 178-8 | 3-97 | 4-43 | 10,640 |
| May | 542 | 173 | 356-2 | 7-90 | 9-10 | 21,902 |
| June | 722 | 242 | 411-8 | 9-10 | 10-10 | 25,504 |
| July | 619 | 82 | 243-4 | 5-40 | 6-20 | 14,966 |
| August | 82 | 26 | 43-0 | 0-95 | 1-09 | 2,644 |
| September | 189 | 25 | 48-4 | 1-07 | 1-19 | 2,880 |
| October | 118 | 43 | 65-0 | 1-40 | 1-60 | 3,997 |
| November | 189 | 43 | 78-0 | 1-70 | 1-90 | 4,641 |
| December | 67 | 35 | (for period | December | 1 to Decem | ber 13.) |
| The period | 722 | 24 | 161-8 | 3-57 | 36-41 | 89,123 |

NOTE.—Winter conditions obtained after December 13.

The mean annual precipitation at Revelstoke is given as 42-99 inches (Meteorological Service, Department of Marine and Fisheries) which is probably slightly less than the precipitation over the Crazy creek drainage area.

The gauge reader, Mr. J. Lidstone, states that from his observation of the amount of snow on hills during the winter of 1913-14 that the total run-off of the stream during 1914 is about 33 per cent less than in average years.

SESSIONAL PAPER No. 25e

EAGLE RIVER, AT MALAKWA, (2010).

Location.—Section 9, township 23, range 6, west 6th meridian.

Records Available.—May 14 to December 31, 1913; January 8, to December 12, 1914.

Drainage Area.—Four hundred and twenty square miles.

Gauge.—Standard chain gauge situated on highway bridge and read daily by P. C. Col'l.

Channel.—The channel is uniform and straight for 100 yards above and below the gauge.

Discharge Measurements.—Are made from upstream side of highway bridge. Velocities are uniform and not too high.

Winter Flow.—Partial ice conditions exist on the river during January and February.

Accuracy.—The accuracy of results is considered to be very high, nine measurements have been obtained at varying stages, but during March, April, and May, 1914, gauge readings were not considered to be very reliable.

DISCHARGE MEASUREMENTS of Eagle River at Malakwa, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|-----------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Nov. 7..... | E. M. Dann & K. G. Chisholm | 1,505 | 111.0 | 454.0 | 1.36 | 2.61 | 620.0 |
| 1914. | | | | | | | |
| Mar. 3..... | K. G. Chisholm..... | 1,505 | 125.0 | 206.5 | 1.24 | 1.80 | 257.0 |
| May 18..... | E. H. Trederoft..... | 1,055 | 111.0 | 717.7 | 3.98 | 4.90 | 2,860.0 |
| July 16..... | "..... | 1,923 | 119.5 | 718.7 | 4.14 | 5.05 | 2,972.0 |

See measurements of Eagle river in Water Resources Paper Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Eagle River near Malakwa, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | 320 | 2-00 | 320 | 1-80 | 256 | 2-25 | 422 | 4-50 | 2,285 | 6-60 | 6,500 |
| 2. | | 320 | 1-95 | 302 | 1-80 | 256 | 2-20 | 400 | 5-20 | 3,280 | 6-30 | 5,655 |
| 3. | | 320 | 1-95 | 302 | 1-80 | 256 | 2-25 | 422 | 5-20 | 3,280 | 6-20 | 5,400 |
| 4. | | 355 | 1-95 | 302 | 1-80 | 256 | 2-35 | 470 | 5-10 | 3,125 | 5-30 | 3,460 |
| 5. | | 355 | 1-85 | 270 | 1-80 | 256 | 2-80 | 725 | 4-70 | 2,550 | 5-05 | 3,047 |
| 6. | | 355 | | 270 | 1-80 | 256 | 3-05 | 904 | 4-45 | 2,225 | 5-00 | 2,970 |
| 7. | | 400 | | 270 | 1-80 | 256 | 3-35 | 1,127 | 4-30 | 2,050 | 4-90 | 2,825 |
| 8. | 2-20 | 400 | | 270 | 1-70 | 225 | 3-55 | 1,292 | 4-45 | 2,225 | 4-55 | 2,350 |
| 9. | 2-25 | 422 | | 256 | 1-75 | 240 | 3-65 | 1,380 | 4-65 | 2,482 | 4-65 | 2,482 |
| 10. | 2-20 | 400 | | 256 | 1-75 | 240 | 3-70 | 1,425 | 5-00 | 2,970 | 5-30 | 3,460 |
| 11. | 2-20 | 400 | | 256 | 1-80 | 256 | 3-75 | 1,472 | | | 5-40 | 3,645 |
| 12. | 2-20 | 400 | | 256 | 1-80 | 256 | 3-85 | 1,570 | | | 5-45 | 3,737 |
| 13. | 2-15 | 377 | | 256 | 1-90 | 285 | 4-20 | 1,935 | | | 5-90 | 4,655 |
| 14. | 2-10 | 355 | | 256 | 1-90 | 285 | 4-20 | 1,935 | | | 6-10 | 5,145 |
| 15. | 2-10 | 355 | | 256 | 1-95 | 302 | 4-50 | 2,285 | | | 6-65 | 6,650 |
| 16. | 2-10 | 355 | | 256 | 1-95 | 302 | 4-50 | 2,285 | | | 6-25 | 5,527 |
| 17. | 2-10 | 355 | | 256 | 1-95 | 302 | 4-30 | 2,050 | 5-60 | 4,025 | 6-40 | 5,925 |
| 18. | 2-10 | 355 | | 256 | 2-05 | 337 | 4-15 | 1,880 | | 4,025 | 6-70 | 6,800 |
| 19. | 2-15 | 377 | | 270 | 2-05 | 337 | 4-35 | 2,107 | 5-00 | 2,970 | 6-00 | 4,900 |
| 20. | 2-20 | 400 | | 270 | 2-10 | 355 | 4-45 | 2,225 | 4-95 | 2,897 | 5-00 | 4,025 |
| 21. | 2-10 | 355 | | 270 | 2-20 | 400 | 4-30 | 2,050 | 5-15 | 3,202 | 5-15 | 3,202 |
| 22. | 2-10 | 355 | 1-85 | 270 | 2-25 | 422 | 4-20 | 1,935 | 5-30 | 3,460 | 5-00 | 2,970 |
| 23. | 2-10 | 355 | 1-80 | 256 | 2-30 | 445 | 3-95 | 1,670 | 5-35 | 3,552 | 4-90 | 2,825 |
| 24. | 2-10 | 355 | 1-80 | 256 | 2-30 | 445 | 4-00 | 1,720 | 5-40 | 3,645 | 4-85 | 2,755 |
| 25. | 2-10 | 355 | 1-85 | 270 | 2-20 | 400 | 4-00 | 1,720 | 5-55 | 3,927 | 5-10 | 3,125 |
| 26. | | 337 | 1-80 | 256 | 2-25 | 422 | 3-95 | 1,670 | | | 5-55 | 3,927 |
| 27. | 2-05 | 337 | 1-80 | 256 | 2-30 | 445 | 3-90 | 1,620 | | | 5-35 | 3,552 |
| 28. | 2-00 | 320 | 1-80 | 256 | 2-20 | 400 | 4-20 | 1,935 | 4-40 | 2,165 | 5-30 | 3,460 |
| 29. | 2-10 | 355 | | | 2-20 | 400 | 4-30 | 2,050 | | | 5-20 | 3,280 |
| 30. | 2-10 | 355 | | | 2-20 | 400 | 4-35 | 2,107 | | | 5-40 | 3,645 |
| 31. | 2-15 | 377 | | | 2-25 | 422 | | | | | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Eagle River near Malakwa, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5-55 | 3,927 | 3-50 | 1,250 | 2-60 | 605 | 3-30 | 1,090 | 3-20 | 1,015 | 2-60 | 605 |
| 2 | 5-85 | 4,542 | 3-50 | 1,250 | 2-60 | 605 | 3-25 | 1,052 | 3-90 | 1,620 | 2-55 | 577 |
| 3 | 5-80 | 4,430 | 3-55 | 1,292 | 2-65 | 632 | 3-10 | 940 | 3-60 | 1,335 | 2-60 | 605 |
| 4 | 5-70 | 4,225 | 3-50 | 1,250 | 2-65 | 632 | 2-90 | 795 | 3-45 | 1,207 | 2-45 | 522 |
| 5 | 5-40 | 3,645 | 3-30 | 1,090 | 2-60 | 605 | 2-95 | 830 | 3-40 | 1,165 | 2-30 | 445 |
| 6 | 5-20 | 3,280 | 3-40 | 1,165 | 2-40 | 495 | 2-80 | 725 | 3-35 | 1,127 | 2-40 | 495 |
| 7 | 5-05 | 3,047 | 3-30 | 1,090 | 2-60 | 605 | 2-80 | 725 | 3-20 | 1,015 | 2-30 | 445 |
| 8 | 4-95 | 2,897 | 3-30 | 1,090 | 2-90 | 795 | 2-70 | 660 | 3-30 | 1,090 | 2-20 | 400 |
| 9 | 4-85 | 2,755 | 3-20 | 1,015 | 2-90 | 795 | 2-70 | 660 | 3-15 | 977 | 2-30 | 445 |
| 10 | 4-90 | 2,825 | 3-00 | 865 | 2-60 | 605 | 2-60 | 605 | 3-05 | 902 | 2-10 | 355 |
| 11 | 5-00 | 2,970 | 2-90 | 795 | 2-75 | 692 | 2-60 | 605 | 3-10 | 940 | 2-20 | 400 |
| 12 | 5-10 | 3,125 | 3-10 | 940 | 2-65 | 632 | 2-60 | 605 | 3-00 | 865 | 2-10 | 355 |
| 13 | 5-00 | 2,970 | 2-90 | 795 | 2-55 | 577 | 2-60 | 605 | 2-80 | 725 | | |
| 14 | 5-50 | 3,830 | 3-00 | 865 | 2-60 | 605 | 2-55 | 577 | 2-70 | 660 | | |
| 15 | 6-65 | 6,650 | 3-05 | 902 | 2-40 | 495 | 2-50 | 550 | 2-60 | 605 | | |
| 16 | 5-10 | 3,125 | 3-00 | 865 | 2-30 | 445 | 2-65 | 632 | 2-50 | 550 | | |
| 17 | 4-50 | 2,285 | 2-90 | 795 | 2-35 | 470 | 3-90 | 1,620 | 2-50 | 550 | | |
| 18 | 4-40 | 2,165 | 2-95 | 830 | 2-70 | 660 | 3-70 | 1,425 | 2-55 | 577 | | |
| 19 | 4-40 | 2,165 | 2-95 | 830 | 3-40 | 1,165 | 3-65 | 1,380 | 2-40 | 495 | | |
| 20 | 4-60 | 2,415 | 3-00 | 865 | 3-00 | 865 | 3-50 | 1,250 | 2-40 | 495 | | |
| 21 | 4-00 | 1,720 | 3-00 | 865 | 2-85 | 760 | 3-25 | 1,052 | 2-35 | 470 | | |
| 22 | 3-75 | 1,472 | 2-90 | 795 | 2-80 | 725 | 3-10 | 940 | 2-30 | 445 | | |
| 23 | 3-60 | 1,335 | 2-90 | 795 | 2-80 | 725 | 3-00 | 865 | 2-25 | 422 | | |
| 24 | 3-60 | 1,335 | 2-70 | 660 | 2-90 | 795 | 2-90 | 795 | 2-30 | 445 | | |
| 25 | 3-60 | 1,335 | 2-80 | 725 | 2-90 | 795 | 2-80 | 725 | 2-50 | 550 | | |
| 26 | 3-50 | 1,250 | 2-70 | 660 | 2-95 | 830 | 2-80 | 725 | 2-60 | 605 | | |
| 27 | 3-40 | 1,165 | 2-80 | 725 | 4-30 | 2,050 | 2-75 | 692 | 2-60 | 605 | | |
| 28 | 3-30 | 1,090 | 2-80 | 725 | 3-45 | 1,207 | 2-70 | 660 | 2-80 | 725 | | |
| 29 | 3-30 | 1,090 | 2-75 | 692 | 3-35 | 1,127 | 2-70 | 660 | 2-80 | 725 | | |
| 30 | 3-40 | 1,165 | 2-70 | 660 | 3-30 | 1,090 | 2-90 | 795 | 2-70 | 660 | | |
| 31 | 3-65 | 1,380 | 2-65 | 632 | | | 3-30 | 1,090 | | | | |

MONTHLY DISCHARGE of Eagle River near Malakwa, for 1914.

(Drainage area, 420 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|------------------------------------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| January | 422 | 320 | 362 | 0-9 | 1-0 | 22,277 |
| February | 320 | 256 | 268 | 0-6 | 0-7 | 14,844 |
| March | 445 | 225 | 326 | 0-8 | 0-9 | 20,063 |
| April | 2,285 | 400 | 1,559 | 3-7 | 4-1 | 92,806 |
| May | 4,025 | 2,050 | (For period of 20 days) | | | |
| June | 6,800 | 2,350 | 4,063 | 9-7 | 10-8 | 250,000 |
| July | 6,650 | 1,090 | 2,632 | 6-3 | 7-3 | 161,871 |
| August | 1,292 | 632 | 896 | 2-1 | 2-4 | 55,093 |
| September | 2,050 | 445 | 769 | 1-8 | 2-0 | 45,783 |
| October | 1,620 | 550 | 849 | 2-0 | 2-3 | 52,200 |
| November | 1,620 | 422 | 785 | 1-9 | 2-1 | 46,700 |
| December | 605 | 355 | (for period Dec. 1st to Dec. 12th) | | | |
| The year | 6,800 | 225 | 1,332 (Estimated). | 3-15 | 42-7 | 975,300 (Estimated) |

Note.—During part of January and part of February the river was affected to a slight extent by ice. Consequently the records for these two months are less reliable than for the remainder of the year.

Owing to the unreliability of gauge readings for a portion of May, it was thought best to leave that part of the month blank, gauge readings and discharges being filled in only in those cases where reasonable reliance can be placed thereon.

GRANITE CREEK (2064).

Location.—Near Coalmont, Water District No. 4.

Records Available.—June 19 to December 31, 1914.

Drainage Area.—Forty square miles.

Gauge.—Standard vertical staff gauge graduated in feet and tenths, situated on footbridge. Read daily by Miss Emily Cook.

Channel.—Channel is straight for 100 feet above and 500 feet below measuring section. Velocity high. Bed of stream is composed of gravel and rock, considered permanent.

Discharge Measurements.—Four discharge measurements were obtained during 1914. Highest recorded flow 300 cubic feet per second.

Winter Flow.—No records have been obtained during winter months on this stream, but ice conditions are expected to prevail throughout January and February.

Accuracy.—The accuracy of returns will eventually be high, but several more measurements are required to define curve satisfactorily.

DISCHARGE MEASUREMENTS of Granite Creek near Coalmont, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 18..... | K. G. Chisholm..... | 1,913 | 68.0 | 92.0 | 3.26 | 2.22 | 300.0 |
| July 25..... | "..... | 1,913 | 27.0 | 44.0 | 0.70 | 1.32 | 31.0 |
| Sept. 3..... | "..... | 1,913 | 26.0 | 20.1 | 0.61 | 1.05 | 12.2 |
| Nov. 26..... | "..... | 1,913 | 37.0 | 36.0 | 0.86 | 1.4 | 31.0 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Granite Creek near mouth, for 1914.

| DAY. | June. | | July. | | August. | | September. | | October. | | November. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 1-90 | 129 | 1-20 | 21 | 1-05 | 12 | 1-15 | 18 | 1-35 | 34 |
| 2..... | | | 1-90 | 129 | 1-20 | 21 | 1-05 | 12 | 1-20 | 21 | 1-50 | 50 |
| 3..... | | | 1-85 | 115 | 1-20 | 21 | 1-05 | 12 | 1-20 | 21 | 1-40 | 39 |
| 4..... | | | 1-75 | 90 | 1-15 | 18 | 1-05 | 12 | 1-20 | 21 | 1-40 | 39 |
| 5..... | | | 1-70 | 79 | 1-15 | 18 | 1-05 | 12 | 1-20 | 21 | 1-45 | 45 |
| 6..... | | | 1-70 | 79 | 1-15 | 18 | 1-05 | 12 | 1-20 | 21 | 1-35 | 34 |
| 7..... | | | 1-70 | 79 | 1-20 | 21 | 1-05 | 12 | 1-20 | 21 | 1-30 | 29 |
| 8..... | | | 1-65 | 71 | 1-25 | 25 | 1-10 | 15 | 1-20 | 21 | 1-30 | 29 |
| 9..... | | | 1-60 | 63 | 1-25 | 25 | 1-20 | 21 | 1-25 | 25 | 1-35 | 34 |
| 10..... | | | 1-60 | 63 | 1-20 | 21 | 1-15 | 18 | 1-25 | 25 | 1-30 | 29 |
| 11..... | | | 1-55 | 56 | 1-15 | 18 | 1-15 | 18 | 1-20 | 21 | 1-50 | 50 |
| 12..... | | | 1-55 | 56 | 1-15 | 18 | 1-15 | 18 | 1-20 | 21 | 1-35 | 34 |
| 13..... | | | 1-50 | 50 | 1-15 | 18 | 1-10 | 15 | 1-20 | 21 | 1-30 | 29 |
| 14..... | | | 1-50 | 50 | 1-10 | 15 | 1-10 | 15 | 1-20 | 21 | 1-30 | 29 |
| 15..... | | | 1-50 | 50 | 1-10 | 15 | 1-20 | 21 | 1-15 | 18 | | |
| 16..... | | | 1-45 | 45 | 1-10 | 15 | 1-20 | 21 | 1-15 | 18 | | |
| 17..... | | | 1-45 | 45 | 1-10 | 15 | 1-20 | 21 | 1-15 | 18 | | |
| 18..... | | | 1-40 | 39 | 1-10 | 15 | 1-25 | 25 | 1-20 | 21 | | |
| 19..... | 2-20 | 280 | 1-40 | 39 | 1-10 | 15 | 1-30 | 29 | 1-30 | 29 | | |
| 20..... | 2-10 | 215 | 1-40 | 39 | 1-10 | 15 | 1-20 | 21 | 1-25 | 25 | | |
| 21..... | 2-05 | 191 | 1-40 | 39 | 1-15 | 18 | 1-20 | 21 | 1-25 | 25 | | |
| 22..... | 2-00 | 168 | 1-40 | 39 | 1-10 | 15 | 1-15 | 18 | 1-20 | 21 | | |
| 23..... | 2-00 | 168 | 1-35 | 34 | 1-10 | 15 | 1-15 | 18 | 1-20 | 21 | | |
| 24..... | 2-00 | 168 | 1-35 | 34 | 1-10 | 15 | 1-15 | 18 | 1-20 | 21 | 1-20 | 21 |
| 25..... | 2-05 | 191 | 1-30 | 29 | 1-10 | 15 | 1-10 | 15 | 1-20 | 21 | | |
| 26..... | 2-00 | 168 | 1-30 | 29 | 1-10 | 15 | 1-10 | 15 | 1-20 | 21 | 1-40 | 39 |
| 27..... | 2-00 | 168 | 1-30 | 29 | 1-10 | 15 | 1-15 | 18 | 1-20 | 21 | 1-40 | 39 |
| 28..... | 1-95 | 148 | 1-30 | 29 | 1-05 | 12 | 1-25 | 25 | 1-20 | 21 | 1-40 | 39 |
| 29..... | 1-90 | 129 | 1-30 | 29 | 1-00 | 10 | 1-20 | 21 | 1-20 | 21 | 1-30 | 29 |
| 30..... | 1-95 | 148 | 1-25 | 25 | 1-00 | 10 | 1-15 | 18 | 1-20 | 21 | 1-30 | 29 |
| 31..... | | | 1-25 | 25 | 1-00 | 10 | | | 1-30 | 29 | | |

MONTHLY DISCHARGE of Granite Creek at mouth, for 1914.

(Drainage area, 40 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|--|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June..... | 280 | 129 | 178 | 4.4 | 4.9 | 10,592 |
| July..... | 129 | 25 | 55 | 1.4 | 1.6 | 3,381 |
| August..... | 25 | 10 | 16.7 | 0.4 | 0.5 | 1,027 |
| September..... | 29 | 12 | 17.6 | 0.4 | 0.4 | 1,047 |
| October..... | 29 | 18 | 21.6 | 0.5 | 0.6 | 1,328 |
| November..... | 50 | 21 | (From 1st to 14th, 24th, 26th to the 30th) | | | |

NOTE.—The average annual precipitation over this drainage area is probably 20 inches at the stream's mouth, to 40 inches at its source.

The station was not established until the freshet for 1914 was almost over.

Ice conditions existed during December and part of November

KETTLE RIVER, NORTH FORK (2052).

Location.—At Grand Forks, Water District No. 5.

Records Available.—June 1 to December 31, 1914.

Drainage Area.—Six hundred and forty square miles.

Gauge.—Standard vertical staff gauge situated on foot bridge, graduated in feet and tenths, and read daily by Geo. O'Keefe.

Channel.—Channel is straight for 100 yards above and below measuring section. Velocity high.

Discharge Measurements.—Five discharge measurements have been obtained in 1914. Meterings are made by cable suspension from foot bridge.

Winter Flow.—No records have been obtained on this river during winter months.

Accuracy.—The accuracy will eventually be high. The present results should fall well within 15 per cent. Results for June may be inaccurate since slag from the Granby Smelter is sometimes carried downstream to the gauging section prior to the freshet, not being carried out until the spring floods are at their height.

DISCHARGE MEASUREMENTS of Kettle River, North Fork, at Grand Forks, 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section. | Mean Velocity. | Gauge He.ght. | Discharge. |
|--------------|-----------------------|-----------|-------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| May 19..... | C. E. Richardson..... | 1527 | 130 | 1,100 | 4.59 | 5.08 | 5,050 |
| June 9..... | K. G. Chisholm..... | 1913 | 132 | 847 | 2.77 | 4.00 | 2,348 |
| July 22..... | "..... | 1913 | 123 | 474 | 0.90 | 1.48 | 426 |
| Aug. 22..... | "..... | 1913 | | 255 | 0.35 | 0.52 | 88 |
| " 24..... | "..... | 1913 | | 244 | 0.35 | 0.50 | 86 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

| DAY. | June. | |
|---------|---------------|-------------|
| | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. |
| 1..... | 5-10 | 5,100 |
| 2..... | 5-65 | 7,360 |
| 3..... | 7-00 | 13,400 |
| 4..... | 7-05 | 13,625 |
| 5..... | 6-00 | 8,900 |
| 6..... | 5-10 | 5,100 |
| 7..... | 4-70 | 3,890 |
| 8..... | 4-30 | 2,850 |
| 9..... | 4-05 | 2,420 |
| 10..... | 3-93 | 2,205 |
| 11..... | 4-00 | 2,350 |
| 12..... | 4-00 | 2,350 |
| 13..... | 4-35 | 2,950 |
| 14..... | 5-10 | 5,100 |
| 15..... | 5-20 | 5,480 |
| 16..... | 5-35 | 6,090 |
| 17..... | 5-60 | 7,150 |
| 18..... | 5-75 | 7,785 |
| 19..... | 5-30 | 5,880 |
| 20..... | 4-70 | 3,800 |
| 21..... | 4-40 | 3,050 |
| 22..... | 4-00 | 2,350 |
| 23..... | 3-75 | 2,030 |
| 24..... | 3-60 | 1,875 |
| 25..... | 3-70 | 1,975 |
| 26..... | 3-70 | 1,975 |
| 27..... | 3-70 | 1,975 |
| 28..... | 3-60 | 1,875 |
| 29..... | 3-50 | 1,780 |
| 30..... | 3-65 | 1,925 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 3-60 | 1,875 | 1-00 | 220 | 0-45 | 78 | 1-30 | 340 | 2-00 | 695 | 1-50 | 435 |
| 2. | 3-50 | 1,780 | 1-00 | 220 | 0-45 | 77 | 1-25 | 320 | 2-15 | 780 | 1-50 | 435 |
| 3. | 3-50 | 1,780 | 1-00 | 220 | 0-45 | 78 | 1-25 | 320 | 2-35 | 900 | 1-50 | 435 |
| 4. | 3-35 | 1,640 | 0-90 | 180 | 0-40 | 70 | 1-20 | 300 | 2-50 | 995 | 1-50 | 435 |
| 5. | 3-30 | 1,595 | 0-90 | 180 | 0-40 | 70 | 1-20 | 300 | 2-50 | 995 | 1-50 | 435 |
| 6. | 3-10 | 1,430 | 0-80 | 150 | 0-40 | 70 | 1-20 | 300 | 2-50 | 995 | 1-40 | 385 |
| 7. | 2-85 | 1,235 | 0-70 | 120 | 0-40 | 70 | 1-15 | 280 | 2-50 | 995 | 1-40 | 385 |
| 8. | 2-70 | 1,130 | 0-40 | 70 | 0-45 | 77 | 1-15 | 280 | 2-40 | 930 | 1-30 | 340 |
| 9. | 2-55 | 1,025 | 0-40 | 70 | 0-45 | 78 | 1-10 | 260 | 2-30 | 870 | 1-20 | 300 |
| 10. | 2-40 | 930 | 0-50 | 85 | 0-50 | 85 | 1-10 | 260 | 2-30 | 870 | 1-10 | 260 |
| 11. | 2-30 | 870 | 0-50 | 85 | 0-50 | 85 | 1-10 | 260 | 2-20 | 810 | 1-00 | 220 |
| 12. | 2-20 | 810 | 0-60 | 100 | 0-55 | 93 | 1-10 | 260 | 2-20 | 810 | 0-90 | 180 |
| 13. | 2-10 | 750 | 0-60 | 100 | 0-55 | 92 | 1-10 | 260 | 2-10 | 750 | 0-90 | 180 |
| 14. | 2-10 | 750 | 0-60 | 100 | 0-55 | 93 | 1-15 | 280 | 2-10 | 750 | 0-90 | 180 |
| 15. | 2-00 | 695 | 0-60 | 100 | 0-60 | 100 | 1-15 | 280 | 2-20 | 810 | 0-90 | 180 |
| 16. | 2-00 | 695 | 0-60 | 100 | 0-60 | 100 | 1-20 | 300 | 2-20 | 810 | 0-90 | 180 |
| 17. | 1-90 | 640 | 0-60 | 100 | 0-70 | 120 | 1-35 | 362 | 1-90 | 640 | 0-90 | 180 |
| 18. | 1-80 | 585 | 0-60 | 100 | 0-70 | 120 | 1-55 | 460 | 1-80 | 585 | 0-90 | 180 |
| 19. | 1-70 | 535 | 0-60 | 100 | 0-70 | 120 | 1-90 | 640 | 1-80 | 585 | 0-90 | 180 |
| 20. | 1-60 | 485 | 0-60 | 100 | 0-85 | 165 | 2-10 | 750 | 1-80 | 585 | 0-90 | 180 |
| 21. | 1-50 | 435 | 0-60 | 100 | 1-05 | 240 | 2-10 | 750 | 1-80 | 585 | 0-90 | 180 |
| 22. | 1-40 | 385 | 0-60 | 100 | 1-15 | 280 | 2-00 | 695 | 1-80 | 585 | 0-90 | 180 |
| 23. | 1-40 | 385 | 0-55 | 92 | 1-10 | 260 | 1-85 | 613 | 1-80 | 585 | 0-90 | 180 |
| 24. | 1-30 | 340 | 0-55 | 92 | 1-10 | 260 | 1-80 | 585 | 1-80 | 585 | 0-90 | 180 |
| 25. | 1-30 | 340 | 0-55 | 93 | 1-10 | 260 | 1-80 | 585 | 1-70 | 535 | 0-90 | 180 |
| 26. | 1-30 | 340 | 0-50 | 85 | 1-10 | 260 | 1-80 | 585 | 1-70 | 535 | 0-90 | 180 |
| 27. | 1-20 | 300 | 0-50 | 85 | 1-20 | 300 | 1-70 | 535 | 1-60 | 485 | 1-00 | 220 |
| 28. | 1-20 | 300 | 0-50 | 85 | 1-20 | 300 | 1-70 | 535 | 1-60 | 485 | 1-00 | 220 |
| 29. | 1-10 | 260 | 0-50 | 85 | 1-30 | 340 | 1-70 | 535 | 1-60 | 485 | 1-00 | 220 |
| 30. | 1-10 | 260 | 0-50 | 85 | 1-30 | 340 | 1-70 | 535 | 1-60 | 485 | 1-00 | 220 |
| 31. | 1-00 | 220 | 0-50 | 85 | | | 1-85 | 613 | | | 1-00 | 220 |

MONTHLY DISCHARGE of Kettle River, North Fork, near Grand Forks, for 1914.

(Drainage area, 640 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June..... | 13,625 | 1,780 | 4,483 | 7-0 | 7-8 | 266,757 |
| July..... | 1,875 | 220 | 800 | 1-2 | 1-4 | 49,190 |
| August..... | 220 | 70 | 112-5 | 0-2 | 0-2 | 6,917 |
| September..... | 340 | 70 | 156-0 | 0-24 | 0-27 | 9,283 |
| October..... | 750 | 260 | 431-5 | 0-7 | 0-8 | 26,532 |
| November..... | 995 | 485 | 717-0 | 1-1 | 1-2 | 42,664 |
| December..... | 435 | 180 | 254 | 0-4 | 0-5 | 15,620 |
| The period..... | 13,625 | 70 | 993-4 | 1-55 | 12-17 | 416,963 |

NOTE.—No precipitation records available.

Mr. George O'Keefe, gauge reader, states that only in very severe winters does the north fork of the Kettle river freeze at this point. He states that it has not been frozen over once during the period of his residence at Grand Forks—fourteen years.

SESSIONAL PAPER No. 25e

KETTLE RIVER, WEST FORK (2045).

Location.—Near Westbridge, Water District No. 5.*Records Available.*—February 23 to September 30, 1914.*Drainage Area.*—Six hundred and ninety square miles.*Gauge.*—Standard vertical staff gauge, graduated in feet and tenths, read daily by R. Demazes.*Channel.*—Channel is straight for 500 feet above and below measuring section. Bed composed of gravel and boulders. Velocity varies with stage of water. Highest recorded mean velocity 4 feet per second. Highest recorded discharge 1,235 cubic feet per second.*Discharge Measurements.*—Are obtained from bridge. Three measurements were procured during 1914 at varying stages.*Winter Flow.*—No records have been taken on this river during winter months. Partial ice conditions prevail during January and February.*Accuracy.*—Accuracy of returns is considered to be fairly high, and results should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Kettle River, West Fork, at Westbridge, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|------------------------------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 7..... | E. M. Dann and K. G. Chisholm..... | 1,913 | 97.5 | 304.0 | 4.05 | 1.78 | 1,235.0 |
| July 20..... | K. G. Chisholm..... | 1,913 | 97.0 | 122.0 | 1.43 | -0.69 | 174.0 |
| Aug. 27..... | "..... | 1,913 | 41.0 | 35.0 | 1.20 | -0.71 | 42.0 ¹ |

¹Low-water section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

| DAY. | February. | | March. | | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | 150 | 0-50 | 360 | 3-00 | 2,560 | 3-20 | 2,770 |
| 2 | | | | 160 | 0-50 | 360 | 3-70 | 3,305 | 3-05 | 2,610 |
| 3 | | | | 170 | 0-55 | 380 | 4-05 | 3,670 | 4-00 | 3,615 |
| 4 | | | | 180 | 0-60 | 400 | 3-80 | 3,415 | 3-35 | 2,932 |
| 5 | | | | 190 | 0-70 | 445 | 3-40 | 2,985 | 2-90 | 2,445 |
| 6 | | | 0-0 | 200 | 0-75 | 470 | 3-35 | 2,932 | 2-45 | 1,965 |
| 7 | | | 0-0 | 200 | 1-00 | 610 | 3-35 | 2,932 | 2-40 | 1,910 |
| 8 | | | 0-0 | 200 | 1-50 | 975 | 3-25 | 2,825 | 2-20 | 1,695 |
| 9 | | | 0-0 | 200 | 1-60 | 1,065 | 2-90 | 2,445 | 2-10 | 1,590 |
| 10 | | | 0-0 | 200 | 1-85 | 1,317 | 2-95 | 2,502 | 2-10 | 1,590 |
| 11 | | | 0-0 | 200 | 1-95 | 1,425 | 2-75 | 2,287 | 2-05 | 1,535 |
| 12 | | | 0-05 | 215 | 2-15 | 1,642 | 2-75 | 2,287 | 2-05 | 1,535 |
| 13 | | | 0-05 | 215 | 2-55 | 2,072 | 2-90 | 2,445 | 2-20 | 1,695 |
| 14 | | | 0-05 | 215 | 2-75 | 2,287 | 3-40 | 2,985 | 2-20 | 1,695 |
| 15 | | | 0-10 | 230 | 3-05 | 2,610 | 4-45 | 4,115 | 2-25 | 1,747 |
| 16 | | | 0-10 | 230 | 2-95 | 2,502 | 4-15 | 3,782 | 2-40 | 1,910 |
| 17 | | | 0-15 | 245 | 2-50 | 2,020 | 3-85 | 3,467 | 2-30 | 1,800 |
| 18 | | | 0-20 | 260 | 2-55 | 2,072 | 3-45 | 3,040 | 2-15 | 1,642 |
| 19 | | | 0-45 | 346 | 2-70 | 2,235 | 3-15 | 2,715 | 1-85 | 1,317 |
| 20 | | | 0-60 | 400 | 2-80 | 2,340 | 2-40 | 1,910 | 1-90 | 1,370 |
| 21 | | | 0-70 | 445 | 2-80 | 2,340 | 2-40 | 1,910 | 1-75 | 1,212 |
| 22 | | | 0-65 | 422 | 2-95 | 2,502 | 2-55 | 2,072 | 1-65 | 1,112 |
| 23 | | | 0-60 | 400 | 2-85 | 2,392 | 2-80 | 2,340 | 1-60 | 1,065 |
| 24 | 2-30 | 1,800 | 0-50 | 360 | 2-80 | 2,340 | 2-80 | 2,340 | 1-55 | 1,020 |
| 25 | 2-25 | 1,747 | 0-50 | 360 | 2-70 | 2,235 | 2-95 | 2,502 | 1-55 | 1,020 |
| 26 | 2-22 | 1,715 | 0-50 | 360 | 2-60 | 2,125 | 3-25 | 2,825 | 1-50 | 975 |
| 27 | 2-15 | 1,642 | 0-60 | 400 | 2-50 | 2,020 | 3-25 | 2,825 | 1-55 | 1,020 |
| 28 | 2-10 | 1,590 | 0-65 | 422 | 2-40 | 1,910 | 3-45 | 3,040 | 1-50 | 975 |
| 29 | | | 0-60 | 400 | 2-60 | 2,125 | 3-15 | 2,715 | 1-45 | 932 |
| 30 | | | 0-50 | 360 | 2-70 | 2,235 | 3-05 | 2,160 | 1-25 | 775 |
| 31 | | | 0-50 | 360 | | | 2-80 | 2,340 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

| DAY. | July. | | August. | | September. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.15 | 705 | -0.30 | 120 | -0.80 | 30 |
| 2 | 0.95 | 580 | -0.35 | 110 | -0.80 | 30 |
| 3 | 0.90 | 550 | -0.40 | 100 | -0.80 | 30 |
| 4 | 0.85 | 522 | -0.50 | 80 | -0.70 | 43 |
| 5 | 0.90 | 550 | -0.50 | 80 | -0.70 | 43 |
| 6 | 0.80 | 495 | -0.55 | 70 | -0.70 | 43 |
| 7 | 0.70 | 445 | -0.70 | 43 | -0.60 | 60 |
| 8 | 0.70 | 445 | -0.70 | 43 | -0.60 | 60 |
| 9 | 0.70 | 445 | -0.80 | 30 | -0.60 | 60 |
| 10 | 0.60 | 400 | -0.80 | 30 | -0.60 | 60 |
| 11 | 0.55 | 380 | -0.80 | 30 | -0.50 | 80 |
| 12 | 0.50 | 360 | -0.90 | 15 | -0.50 | 80 |
| 13 | 0.40 | 325 | -0.90 | 15 | -0.40 | 100 |
| 14 | 0.30 | 290 | -0.90 | 15 | -0.40 | 100 |
| 15 | 0.40 | 325 | -0.90 | 15 | -0.50 | 80 |
| 16 | 0.35 | 307 | -0.85 | 23 | -0.50 | 80 |
| 17 | 0.35 | 307 | -0.80 | 30 | -0.40 | 100 |
| 18 | 0.40 | 325 | -0.80 | 30 | -0.30 | 120 |
| 19 | 0.30 | 290 | -0.75 | 37 | -0.30 | 120 |
| 20 | 0.30 | 290 | -0.70 | 43 | -0.30 | 120 |
| 21 | 0.30 | 290 | -0.65 | 52 | -0.35 | 110 |
| 22 | 0.35 | 307 | -0.65 | 52 | -0.30 | 120 |
| 23 | 0.30 | 290 | -0.70 | 43 | -0.30 | 145 |
| 24 | 0.20 | 260 | -0.65 | 52 | -0.20 | 145 |
| 25 | 0.10 | 230 | -0.70 | 43 | -0.25 | 133 |
| 26 | 0.05 | 215 | -0.70 | 43 | -0.30 | 120 |
| 27 | 0.00 | 200 | -0.70 | 43 | -0.30 | 120 |
| 28 | 0.00 | 200 | -0.70 | 43 | -0.25 | 133 |
| 29 | -0.10 | 170 | -0.75 | 37 | -0.20 | 145 |
| 30 | -0.15 | 158 | -0.80 | 30 | -0.25 | 133 |
| 31 | -0.15 | 158 | -0.80 | 30 | | |

MONTHLY DISCHARGE of Kettle River, West Fork, near mouth, for 1914.

(Drainage area, 690.0 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN OFF. | |
|------------|---------------------------|----------|----------------|-----------------|----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area | Total in acre-feet |
| January | | | | | | |
| February | 1,800 | 1,500 | For the period | Feb. 23 | Feb. 28. | 17,347 |
| March | 445 | 150 | 280.5 | 0.4 | 0.5 | |
| April | 2,610 | 360 | 1,660.3 | 2.4 | 2.7 | 98,797 |
| May | 4,115 | 1,910 | 2,778 | 4.0 | 4.6 | 170,816 |
| June | 3,615 | 775 | 1,619 | 2.4 | 2.7 | 98,121 |
| July | 705 | 158 | 340 | 0.5 | 0.6 | 21,459 |
| August | 120 | 15 | 46 | 0.07 | 0.08 | 2,828 |
| September | 145 | 30 | 91.4 | 0.13 | 0.14 | 5,409 |
| The period | 4,115 | 15 | 970.0 | 1.41 | 11.32 | 414,767 |

NOTE.—Precipitation is probably from 20 to 30 inches annually

Returns for October, November and December are withheld from publication owing to unreliability of gauge readings.

KETTLE RIVER NEAR NICHOLSON'S BRIDGE (2046).

Location.—Near Kettle Valley, Water District No. 5.

Records Available.—March 1 to December 11, 1914.

Drainage Area.—Two thousand, one hundred and eighty square miles.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths, situated on pier of highway bridge, and read daily by F. Whiting (rancher).

Channel.—The channel is straight for about 500 feet above and below measuring section. Average width, 150 feet. Bed of river is composed of gravel and sand, and considered permanent. Velocity high and control is good.

Discharge Measurements.—Four discharge measurements were obtained during 1914. Highest recorded discharge 6,215 feet per second.

Winter Flow.—Ice conditions exist during January and February.

Accuracy.—Considered to be very high, and results should be within 5 per cent, except at extreme high water.

DISCHARGE MEASUREMENTS of Kettle River at Nicholson's Bridge, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|-------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 20..... | C. E. Richardson & C. Varcoe. | 1,527 | 178-0 | 1,063-0 | 5-75 | 5-00 | 6,104-0 |
| June 7..... | E. M. Dann & K. G. Chisholm | 1,913 | 162-0 | 869-0 | 4-86 | 3-79 | 4,225-0 |
| July 19..... | " " | 1,913 | 154-0 | 329-0 | 2-93 | 0-36 | 668-0 |
| Aug. 27..... | " " | 1,913 | 137-0 | 184-0 | 0-78 | -0-80 | 144-0 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River near Nicholson's Bridge,
Rock Creek, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | | | -0.6 | 200 | 0.5 | 735 | 4.1 | 4,675 | 4.40 | 5,140 |
| 2..... | | | | | -0.6 | 200 | 0.5 | 735 | 4.7 | 5,610 | 4.90 | 5,930 |
| 3..... | | | | | -0.6 | 200 | 0.5 | 735 | 5.5 | 6,910 | 6.40 | 8,410 |
| 4..... | | | | | -0.6 | 200 | 0.5 | 735 | 5.1 | 6,250 | 6.55 | 8,655 |
| 5..... | | | | | -0.5 | 230 | 0.55 | 765 | 4.55 | 5,370 | 5.35 | 6,660 |
| 6..... | | | | | -0.4 | 265 | 0.8 | 930 | 4.35 | 5,060 | 4.35 | 5,060 |
| 7..... | | | | | -0.4 | 265 | 1.35 | 1,320 | 4.00 | 4,520 | 3.90 | 4,520 |
| 8..... | | | | | -0.4 | 265 | 1.75 | 1,645 | 3.95 | 4,445 | 3.60 | 3,920 |
| 9..... | | | | | -0.4 | 265 | 2.05 | 1,920 | 4.05 | 4,595 | 3.55 | 3,845 |
| 10..... | | | | | -0.4 | 265 | 2.25 | 2,125 | 4.20 | 4,830 | 3.45 | 3,700 |
| 11..... | -0.3 | 300 | | | -0.4 | 265 | 2.55 | 2,460 | 4.60 | 5,450 | 3.50 | 3,775 |
| 12..... | -0.3 | 300 | | | -0.4 | 265 | 2.80 | 2,780 | 4.85 | 5,850 | 3.55 | 3,845 |
| 13..... | -0.3 | 300 | | | -0.4 | 265 | 3.10 | 3,195 | 5.05 | 6,175 | 3.85 | 4,295 |
| 14..... | -0.25 | 320 | | | -0.3 | 300 | 3.45 | 3,700 | 5.60 | 7,075 | 4.35 | 5,060 |
| 15..... | -0.25 | 320 | | | -0.2 | 340 | 3.70 | 4,070 | 6.45 | 8,490 | 4.45 | 5,215 |
| 16..... | -0.25 | 320 | | | -0.1 | 390 | 4.00 | 4,520 | 6.85 | 9,150 | 4.35 | 5,060 |
| 17..... | -0.25 | 320 | | | 0.0 | 440 | 4.00 | 4,520 | 6.10 | 7,915 | 4.40 | 5,140 |
| 18..... | -0.3 | 300 | | | 0.0 | 440 | 3.90 | 4,370 | 5.60 | 7,075 | 4.05 | 4,595 |
| 19..... | -0.3 | 300 | | | 0.0 | 440 | 3.50 | 3,775 | 5.30 | 6,580 | 3.60 | 3,920 |
| 20..... | -0.3 | 300 | | | 0.0 | 440 | 4.15 | 4,750 | 5.00 | 6,095 | 3.35 | 3,555 |
| 21..... | -0.3 | 300 | | | 0.1 | 495 | 4.10 | 4,675 | 5.00 | 6,095 | 3.10 | 3,195 |
| 22..... | -0.3 | 300 | | | 0.15 | 525 | 3.80 | 4,220 | 4.95 | 6,010 | 2.90 | 2,410 |
| 23..... | | | | | 0.3 | 610 | 3.60 | 3,920 | 5.20 | 6,415 | 2.45 | 2,345 |
| 24..... | | | | | 0.4 | 670 | 3.90 | 4,370 | 5.25 | 6,495 | 2.40 | 2,290 |
| 25..... | | | | | 0.45 | 700 | 3.80 | 4,220 | 5.05 | 6,175 | 2.40 | 2,290 |
| 26..... | | | | | 0.5 | 735 | 3.60 | 3,920 | 4.75 | 5,690 | 2.40 | 2,290 |
| 27..... | | | | | 0.5 | 735 | 3.50 | 3,775 | 4.10 | 4,675 | 2.35 | 2,235 |
| 28..... | | | | | 0.5 | 735 | 3.50 | 3,775 | 3.95 | 4,445 | 2.30 | 2,180 |
| 29..... | | | | | 0.5 | 735 | 3.40 | 3,630 | 3.55 | 3,845 | 2.27 | 2,145 |
| 30..... | | | | | 0.5 | 735 | 3.60 | 3,920 | 3.40 | 3,630 | 2.20 | 2,092 |
| 31..... | | | | | 0.5 | 735 | | | 3.80 | 4,220 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River near Nicholson's Bridge, Rock Creek, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 2-00 | 1,870 | -0-4 | 265 | -0-85 | 130 | 0-15 | 520 | 0-5 | 735 | -0-1 | 390 |
| 2. | 1-80 | 1,690 | -0-4 | 265 | -0-90 | 120 | 0-02 | 451 | 0-55 | 765 | -0-1 | 390 |
| 3. | 1-80 | 1,690 | -0-4 | 265 | -0-90 | 120 | 0-0 | 440 | 0-7 | 865 | -0-2 | 340 |
| 4. | 1-70 | 1,600 | -0-45 | 250 | -0-90 | 120 | 0-0 | 440 | 0-6 | 800 | -0-2 | 340 |
| 5. | 1-60 | 1,520 | -0-50 | 230 | -0-90 | 120 | 0-0 | 440 | 0-68 | 852 | -0-2 | 340 |
| 6. | 1-45 | 1,400 | -0-50 | 230 | -0-90 | 120 | -0-02 | 430 | 0-77 | 910 | -0-2 | 340 |
| 7. | 1-30 | 1,280 | -0-50 | 230 | -0-90 | 120 | -0-10 | 390 | 0-69 | 845 | -0-2 | 340 |
| 8. | 1-15 | 1,175 | -0-55 | 215 | -0-85 | 130 | -0-15 | 365 | 0-55 | 765 | -0-2 | 340 |
| 9. | 1-05 | 1,105 | -0-55 | 215 | -0-80 | 140 | -0-20 | 340 | 0-50 | 735 | -0-2 | 340 |
| 10. | 0-85 | 965 | -0-55 | 215 | -0-80 | 140 | -0-22 | 330 | 0-42 | 683 | -0-2 | 340 |
| 11. | 0-70 | 865 | -0-55 | 215 | -0-75 | 155 | -0-25 | 320 | -0-37 | 652 | -0-22 | 332 |
| 12. | 0-65 | 830 | -0-55 | 215 | -0-75 | 155 | -0-25 | 320 | 0-30 | 610 | | |
| 13. | 0-50 | 735 | -0-60 | 200 | -0-70 | 170 | -0-20 | 340 | 0-25 | 580 | | |
| 14. | 0-60 | 800 | -0-60 | 200 | -0-65 | 185 | -0-15 | 365 | 0-20 | 550 | | |
| 15. | 0-70 | 865 | -0-60 | 200 | -0-60 | 200 | -0-05 | 415 | 0-20 | 550 | | |
| 16. | 0-45 | 700 | -0-60 | 200 | -0-60 | 200 | -0-05 | 415 | 0-20 | 550 | | |
| 17. | 0-40 | 670 | -0-60 | 200 | -0-50 | 230 | 0-02 | 451 | 0-20 | 550 | | |
| 18. | 0-40 | 670 | -0-65 | 185 | -0-40 | 265 | 0-38 | 658 | 0-15 | 520 | | |
| 19. | 0-40 | 670 | -0-65 | 185 | -0-20 | 340 | 0-65 | 832 | 0-10 | 495 | | |
| 20. | 0-40 | 670 | -0-65 | 185 | -0-10 | 390 | 0-60 | 800 | 0-10 | 495 | | |
| 21. | 0-40 | 670 | -0-65 | 185 | 0-0 | 440 | 0-50 | 734 | 0-0 | 440 | | |
| 22. | 0-30 | 610 | -0-70 | 170 | 0-0 | 440 | 0-40 | 670 | 0-0 | 440 | | |
| 23. | 0-30 | 610 | -0-70 | 170 | -0-5 | 415 | 0-32 | 622 | 0-0 | 440 | | |
| 24. | 0-25 | 580 | -0-80 | 140 | -0-15 | 365 | 0-27 | 592 | -0-05 | 415 | | |
| 25. | 0-20 | 550 | -0-80 | 140 | -0-25 | 320 | 0-25 | 580 | -0-05 | 415 | | |
| 26. | 0-15 | 520 | -0-80 | 140 | -0-15 | 365 | 0-20 | 550 | -0-10 | 390 | | |
| 27. | 0-05 | 465 | -0-80 | 140 | -0-15 | 365 | 0-20 | 550 | -0-10 | 390 | | |
| 28. | -0-10 | 390 | -0-80 | 140 | 0-0 | 440 | 0-17 | 533 | -0-10 | 390 | | |
| 29. | -0-20 | 340 | -0-85 | 130 | 0-15 | 520 | 0-15 | 522 | -0-10 | 390 | | |
| 30. | -0-30 | 300 | -0-85 | 130 | 0-20 | 550 | 0-20 | 550 | -0-10 | 390 | | |
| 31. | -0-40 | 265 | -0-85 | 130 | | | 0-27 | 592 | | | | |

MONTHLY DISCHARGE of Kettle River at Nicholson's Bridge, Rock Creek, for 1914.

(Drainage area, 2,180 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|------------------------------------|------------------|-----------------------------------|-----------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| March. | 735 | 200 | 430 | 0-2 | 0-2 | 26,476 |
| April. | 4,750 | 735 | 3,007 | 1-4 | 1-6 | 178,930 |
| May. | 9,150 | 3,630 | 5,800 | 2-7 | 3-1 | 356,660 |
| June. | 8,655 | 2,092 | 4,142 | 1-9 | 2-1 | 246,492 |
| July. | 1,870 | 265 | 873 | 0-4 | 0-5 | 53,679 |
| August. | 265 | 130 | 193 | 0-1 | 0-1 | 11,876 |
| September. | 550 | 120 | 259 | 0-1 | 0-1 | 15,412 |
| October. | 832 | 320 | 502 | 0-2 | 0-2 | 30,867 |
| November. | 916 | 390 | 587 | 0-3 | 0-3 | 34,929 |
| December. | 390 | 332 | (for the period Dec. 1 to Dec. 11) | | | |
| The year. | 9,150 | 120 | 1,395 (estimated) | 0-8 | 8-7 (estimated) | 1,008,000 (estimated) |

NOTE.—Precipitation records are not available, but it probably varies from 20 to 30 inches per annum in average years. This station gives the flow of the Kettle river above Midway before it joins Boundary creek. Winter conditions existed subsequent to December 11.

SESSIONAL PAPER No. 25e

KETTLE RIVER AT CARSON (2049).

Location.—At Carson, Water District No. 5.

Records Available.—September 5 to December 31, 1913; January 1 to 22, February 25 to December 9, 1914.

Drainage Area.—Three thousand and ten square miles.

Gauge.—Gauge is a movable staff gauge situated on downstream side of highway bridge, 4 miles from Grand Forks.

Channel.—Straight at measuring section; bed of stream, gravel and sand; control good.

Discharge Measurements.—Measurements are made from highway bridge. Four meterings were obtained during 1914. Highest recorded discharge 7,840 second-feet.

Winter Flow.—Partial ice conditions prevail during December, January, and February.

Accuracy.—Accuracy is considered good, and results should fall within 10 per cent.

KETTLE RIVER.

The Kettle river has its source in the southern portion of the Gold range, and drains the district between the Okanagan and Arrow lakes. It discharges into the Columbia at Marcus, in the state of Washington. From its source it follows a southerly course to Westbridge, a distance of 75 miles, where it is joined by the West Fork entering from the northeast. From Midway to Rock creek the course is southerly. The river here takes a turn to the southeast and crosses into United States territory at Midway, 10 miles below. After a wide semi-circular loop it crosses the boundary into Canadian territory at Danville, below Grand Forks. At Grand Forks the North Fork joins it. From Grand Forks it flows due east in a line about a mile north of boundary to Cascade. It turns south here across the boundary towards its confluence with the Columbia.

The North Fork and the West Fork are the chief tributaries. Boundary creek and Rock creek are next in size. Boundary creek joins at Midway from the north, Rock creek comes in at the village of Rock Creek from the west. Christina creek discharges into the Kettle near Cascade, draining Christina lake.

The total drainage area in British Columbia is about 3,160 square miles. The drainage area of the North Fork is 640 square miles; of Boundary creek, 125 square miles; of the West Fork, 690 square miles; and of the main river above the West Fork, 1,175 square miles.

The water is used for irrigation in the vicinity of Grand Forks, Cascade, and Rock creek. These are the principal agricultural areas in the district, the most important being that around Grand Forks, where some 2,000 acres are planted in fruit trees. With exception of the localities mentioned there is little agricultural land in the district. The tributary valleys and the major portion of the main valley being narrow and the slopes steep. The plateaus are above the altitude limit for agriculture.

From Grand Forks to Cascade, a distance of 12 miles, the valley of the Kettle river is wide and flat and suitable for irrigation by pumping. Several pumping plants are in operation. The transmission lines from the Cascade Power and Light Company's plant and from the Bonnington Falls plant runs through the valley. Power may be had at 3 cents per kilowatt hour.

There are three hydro-electric developments in the district. The Cascade Power and Light Company's plant at Cascade develops 5,000 horse-power under a head of 155 feet. This is auxiliary to the Bonnington Falls plant on the

Kootenay below Nelson. Power from these plants is used at Grand Forks, Phoenix, and Greenwood for town lighting and for use at the smelters and mines. The Granby Company develop about 700 horse-power under a 30-foot head from the North Forks near Grand Forks for use in its smelter. The city of Greenwood is lighted from a plant of 250 horse-power capacity under 130-foot head at Boundary falls.

Very little data as to climatic conditions are available, precipitation and temperatures vary greatly over the district owing to the irregular formation. The mean annual precipitation in the vicinity of Grand Forks is probably about 15 inches. In the higher altitudes it is greater.

The northern portion of the district is well timbered with cedar, hemlock, and pine. Considerable logging is carried on, the total drive of the Kettle river and its tributaries being over twenty million feet in 1913.

Regular gauging stations have been established at the following places:— At Carson, above the North Fork, on the North Fork near its mouth; on Boundary creek at Greenwood; on the Kettle below Rock creek; and on the West Fork at Westbridge.

DISCHARGE MEASUREMENTS of Kettle River at Carson, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|-------------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 19..... | C. E. Richardson and C. Varcoe..... | 1527 | 169 | 1,460 | 5.37 | 7.15 | 7,840 |
| June 9..... | K. G. Chisholm..... | 1913 | 158 | 1,161 | 3.62 | 8.95 | 4,200 |
| July 23..... | "..... | 1913 | 153 | 693 | 0.99 | 12.09 | 684 |
| Aug. 24..... | "..... | 1913 | 120 | 569 | 0.39 | 12.09 | 221 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River at Carson, for 1913.

| DAY. | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|---------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 12-3 | 555 | 12-1 | 685 | 12-3 | 555 |
| 2 | | | 12-3 | 555 | 12-2 | 620 | 12-3 | 555 |
| 3 | | | 12-4 | 490 | 12-2 | 620 | 12-3 | 555 |
| 4 | | | 12-4 | 490 | 12-2 | 620 | 12-3 | 555 |
| 5 | 11-6 | 1,070 | 12-4 | 490 | 12-1 | 685 | 12-4 | 490 |
| 6 | 11-6 | 1,070 | 12-4 | 490 | 12-0 | 760 | 12-5 | 430 |
| 7 | 11-8 | 910 | 12-4 | 490 | 12-1 | 685 | 12-5 | 430 |
| 8 | 12-0 | 760 | 12-4 | 490 | 12-1 | 685 | 12-4 | 490 |
| 9 | 12-1 | 685 | 12-4 | 490 | 12-2 | 620 | 12-1 | 685 |
| 10 | 12-1 | 685 | 12-5 | 430 | 12-1 | 685 | 12-2 | 620 |
| 11 | 12-2 | 620 | 12-4 | 490 | 12-1 | 685 | 12-2 | 620 |
| 12 | 12-3 | 555 | 12-4 | 490 | 12-2 | 620 | 12-3 | 555 |
| 13 | 12-3 | 555 | 12-4 | 490 | 12-2 | 620 | 12-4 | 490 |
| 14 | 12-3 | 555 | 12-3 | 555 | 12-25 | 587 | 12-4 | 490 |
| 15 | 12-3 | 555 | 12-0 | 760 | 12-4 | 490 | 12-4 | 490 |
| 16 | 12-3 | 555 | 12-0 | 760 | 12-2 | 620 | 12-4 | 490 |
| 17 | 12-4 | 490 | 12-3 | 555 | 12-2 | 620 | 12-5 | 430 |
| 18 | 12-4 | 490 | 12-0 | 760 | 12-1 | 685 | 12-4 | 490 |
| 19 | 12-4 | 490 | 12-3 | 620 | 12-2 | 620 | 12-4 | 490 |
| 20 | 12-4 | 490 | 12-3 | 555 | 12-2 | 620 | 12-4 | 490 |
| 21 | 12-4 | 490 | 12-3 | 555 | 12-25 | 588 | 12-3 | 555 |
| 22 | 12-4 | 490 | 12-2 | 620 | 12-5 | 430 | 12-3 | 555 |
| 23 | 12-45 | 460 | 12-2 | 620 | 12-4 | 490 | 12-1 | 685 |
| 24 | 12-4 | 490 | 12-2 | 620 | 12-4 | 490 | 12-0 | 760 |
| 25 | 12-4 | 490 | 11-8 | 910 | 12-4 | 490 | 12-0 | 760 |
| 26 | 12-4 | 490 | 11-6 | 1,070 | 12-45 | 460 | 12-0 | 760 |
| 27 | 12-5 | 430 | 11-8 | 910 | 12-25 | 587 | 12-1 | 685 |
| 28 | 12-5 | 430 | 11-8 | 910 | 12-25 | 588 | 12-2 | 620 |
| 29 | 12-5 | 430 | 12-0 | 760 | 12-2 | 620 | 12-3 | 555 |
| 30 | 12-4 | 490 | 12-0 | 760 | 12-3 | 555 | 12-3 | 555 |
| 31 | | | 12-1 | 685 | | | 12-4 | 490 |

MONTHLY DISCHARGE of Kettle River, at Carson, for 1913.

(Drainage area, 3,010 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet |
| September | 1,070 | 430 | 585.5 | 0.2 | 0.22 | 34,839 |
| October | 1,070 | 430 | 626.6 | 0.2 | 0.23 | 38,528 |
| November | 760 | 430 | 604.3 | 0.2 | 0.22 | 35,958 |
| December | 760 | 430 | 560.6 | 0.18 | 0.21 | 34,470 |

NOTE.—These data were compiled from gauge readings taken under the direction of Mr. Clifford Varese, Provincial Water Rights Engineer, at Grand Forks, to whom due acknowledgment is made.
For remarks relating to precipitation, etc., see Kettle River for 1914

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, at Carson, for 191 .

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 12-4 | 490 | | | 12-5 | 430 | 12-0 | 760 | 8-90 | 4,275 | 8-30 | 5,380 |
| 2 | 12-5 | 430 | | | 12-5 | 430 | 12-0 | 760 | 8-50 | 5,000 | 8-00 | 5,985 |
| 3 | 12-5 | 430 | | | 12-5 | 430 | 12-05 | 722 | 7-50 | 7,065 | 7-50 | 7,065 |
| 4 | 12-5 | 430 | | | 12-6 | 375 | 11-9 | 835 | 6-90 | 8,400 | 7-70 | 6,625 |
| 5 | 12-5 | 430 | | | 12-6 | 375 | 11-9 | 835 | 7-65 | 6,735 | 7-90 | 6,195 |
| 6 | 12-5 | 430 | | | 12-6 | 375 | 11-6 | 1,070 | 7-90 | 6,195 | 8-20 | 5,575 |
| 7 | 12-4 | 490 | | | 12-6 | 375 | 11-2 | 1,435 | 8-20 | 5,575 | 8-60 | 4,810 |
| 8 | 12-3 | 555 | | | 12-7 | 320 | 10-7 | 1,930 | 8-50 | 5,000 | 8-70 | 4,630 |
| 9 | 12-3 | 555 | | | 12-7 | 320 | 10-4 | 2,235 | 8-20 | 5,575 | 8-90 | 4,275 |
| 10 | 12-4 | 490 | | | 12-7 | 320 | 10-2 | 2,450 | 7-90 | 6,195 | 9-00 | 4,105 |
| 11 | 12-5 | 430 | | | 12-7 | 320 | 9-9 | 2,800 | 7-65 | 6,735 | 9-00 | 4,105 |
| 12 | 12-55 | 402 | | | 12-6 | 375 | 9-75 | 2,995 | 7-70 | 6,625 | 9-00 | 4,105 |
| 13 | 12-6 | 375 | | | 12-6 | 375 | 9-35 | 3,555 | 7-40 | 7,285 | 8-90 | 4,275 |
| 14 | 12-4 | 490 | | | 12-6 | 375 | 9-10 | 3,945 | 7-20 | 7,730 | 8-50 | 5,000 |
| 15 | 12-45 | 460 | | | 12-5 | 430 | 9-00 | 4,105 | 6-25 | 9,920 | 8-30 | 5,380 |
| 16 | 12-4 | 490 | | | 12-5 | 430 | 8-90 | 4,275 | 5-20 | 13,470 | 8-35 | 5,285 |
| 17 | 12-4 | 490 | | | 12-5 | 430 | 8-30 | 5,380 | 5-90 | 10,760 | 8-40 | 5,190 |
| 18 | 12-4 | 490 | | | 12-5 | 430 | 8-50 | 5,000 | 7-00 | 8,175 | 8-60 | 4,810 |
| 19 | 12-5 | 430 | | | 12-5 | 430 | 8-70 | 4,630 | 7-15 | 7,840 | 8-90 | 4,275 |
| 20 | 12-5 | 430 | | | 12-4 | 490 | 8-20 | 5,575 | 7-30 | 7,510 | 9-11 | 3,945 |
| 21 | 12-6 | 375 | | | 12-4 | 490 | 8-20 | 5,575 | 7-50 | 7,065 | 9-30 | 3,630 |
| 22 | 12-6 | 375 | | | 12-3 | 555 | 8-50 | 5,000 | 7-40 | 7,285 | 9-50 | 3,540 |
| 23 | | | | | 12-25 | 587 | 8-60 | 4,810 | 7-50 | 7,065 | 9-60 | 3,200 |
| 24 | | | | | 12-0 | 760 | 8-60 | 4,810 | 7-40 | 7,285 | 9-70 | 3,060 |
| 25 | | | 12-5 | 430 | 11-9 | 835 | 8-40 | 5,190 | 7-30 | 7,510 | 9-70 | 3,060 |
| 26 | | | 12-55 | 402 | 11-9 | 835 | 8-70 | 4,630 | 7-20 | 7,730 | 9-70 | 3,060 |
| 27 | | | 12-5 | 430 | 12-0 | 760 | 8-60 | 4,810 | 7-70 | 6,625 | 9-90 | 2,800 |
| 28 | | | 12-5 | 430 | 12-0 | 760 | 8-70 | 4,630 | 8-20 | 5,575 | 10-0 | 2,680 |
| 29 | | | | | 12-0 | 760 | 8-80 | 4,450 | 8-50 | 5,000 | 10-1 | 2,560 |
| 30 | | | | | 12-0 | 760 | 8-90 | 4,275 | 8-70 | 4,630 | 10-1 | 2,560 |
| 31 | | | | | 12-0 | 760 | | | 8-40 | 5,190 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kettle River, at Carson, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 10.2 | 2,450 | 12.4 | 490 | 12.9 | 221 | 12.0 | 760 | 11.8 | 910 | 12.1 | 685 |
| 2 | 10.3 | 2,340 | 12.4 | 490 | 13.0 | 180 | 12.0 | 760 | 11.7 | 990 | 12.1 | 685 |
| 3 | 10.5 | 2,130 | 12.4 | 490 | 13.0 | 180 | 12.1 | 685 | 11.7 | 990 | 12.2 | 620 |
| 4 | 10.5 | 2,130 | 12.5 | 430 | 13.0 | 180 | 12.2 | 620 | 11.8 | 910 | 12.2 | 620 |
| 5 | 10.7 | 1,930 | 12.5 | 430 | 13.0 | 180 | 12.2 | 620 | 11.6 | 1,070 | 12.3 | 555 |
| 6 | 10.8 | 1,830 | 12.5 | 430 | 13.0 | 180 | 12.3 | 555 | 11.55 | 1,112 | 12.3 | 555 |
| 7 | 10.9 | 1,730 | 12.6 | 375 | 12.9 | 221 | 12.3 | 555 | 11.55 | 1,113 | 12.3 | 555 |
| 8 | 11.0 | 1,630 | 12.6 | 375 | 12.9 | 221 | 12.3 | 555 | 11.6 | 1,070 | 12.3 | 555 |
| 9 | 11.1 | 1,530 | 12.6 | 375 | 12.9 | 221 | 12.3 | 555 | 11.7 | 990 | 12.3 | 555 |
| 10 | 11.3 | 1,340 | 12.6 | 375 | 12.9 | 221 | 12.3 | 555 | 11.75 | 950 | | |
| 11 | 11.4 | 1,245 | 12.6 | 375 | 12.9 | 221 | 12.4 | 490 | 11.8 | 910 | | |
| 12 | 11.5 | 1,155 | 12.4 | 490 | 12.9 | 221 | 12.4 | 490 | 11.8 | 910 | | |
| 13 | 11.6 | 1,070 | 12.5 | 430 | 12.9 | 221 | 12.3 | 555 | 11.8 | 910 | | |
| 14 | 11.4 | 1,245 | 12.5 | 430 | 12.9 | 221 | 12.3 | 555 | 11.9 | 835 | | |
| 15 | 11.4 | 1,245 | 12.5 | 430 | 12.8 | 270 | 12.3 | 555 | 11.9 | 835 | | |
| 16 | 11.4 | 1,245 | 12.5 | 430 | 12.7 | 320 | 12.3 | 555 | 12.1 | 685 | | |
| 17 | 11.4 | 1,245 | 12.6 | 375 | 12.7 | 320 | 12.3 | 555 | 12.1 | 685 | | |
| 18 | 11.5 | 1,155 | 12.6 | 375 | 12.6 | 375 | 12.0 | 760 | 12.1 | 685 | | |
| 19 | 11.7 | 990 | 12.6 | 375 | 12.6 | 375 | 11.5 | 1,155 | 12.0 | 760 | | |
| 20 | 11.7 | 990 | 12.6 | 375 | 12.6 | 375 | 11.6 | 1,070 | 12.1 | 685 | | |
| 21 | 11.8 | 910 | 12.6 | 375 | 12.5 | 430 | 11.6 | 1,070 | 12.1 | 685 | | |
| 22 | 11.9 | 835 | 12.6 | 375 | 12.4 | 490 | 11.7 | 990 | 12.0 | 760 | | |
| 23 | 11.9 | 835 | 12.6 | 375 | 12.3 | 555 | 11.8 | 910 | 12.1 | 685 | | |
| 24 | 12.0 | 760 | 12.7 | 320 | 12.3 | 555 | 11.9 | 835 | 12.1 | 685 | | |
| 25 | 12.0 | 760 | 12.7 | 320 | 12.4 | 490 | 11.9 | 835 | 12.1 | 685 | | |
| 26 | 12.1 | 685 | 12.7 | 320 | 12.4 | 490 | 11.9 | 835 | 12.1 | 685 | | |
| 27 | 12.2 | 620 | 12.8 | 270 | 12.4 | 490 | 12.0 | 760 | 12.1 | 685 | | |
| 28 | 12.3 | 555 | 12.8 | 270 | 12.3 | 555 | 12.0 | 760 | 12.1 | 685 | | |
| 29 | 12.3 | 555 | 12.8 | 270 | 12.3 | 555 | 12.0 | 760 | 12.1 | 685 | | |
| 30 | 12.4 | 490 | 12.8 | 270 | 12.0 | 760 | 12.0 | 760 | 12.1 | 685 | | |
| 31 | 12.4 | 490 | 12.9 | 221 | | | 12.0 | 760 | | | | |

MONTHLY DISCHARGE of Kettle River, at Carson, for 1914.

(Drainage area, 3,010 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF | | |
|------------|---------------------------|----------|-------|-------------------|-----------------------------------|--------------------|-----------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet | |
| January.. | | 555 | 375 | 453 | 0.15 | 0.17 | 27,854 |
| February.. | | | | | | | |
| March | | 835 | 320 | 506 | 0.17 | 0.20 | 31,113 |
| April | | 5,575 | 722 | 3,449 | 1.10 | 1.20 | 305,230 |
| May | | 13,470 | 4,275 | 7,001 | 2.50 | 2.60 | 430,475 |
| June | | 7,065 | 2,560 | 4,365 | 1.40 | 1.60 | 259,764 |
| July | | 2,450 | 490 | 1,230 | 0.40 | 0.50 | 76,511 |
| August | | 490 | 221 | 378 | 0.12 | 0.14 | 23,267 |
| September | | 760 | 180 | 343 | 0.11 | 0.12 | 20,410 |
| October | | 1,155 | 490 | 717 | 0.34 | 0.28 | 44,099 |
| November | | 1,113 | 685 | 831 | 0.27 | 0.30 | 49,448 |
| December | | 685 | 555 | | | | |
| The year | | 13,470 | 180 | 1,700 (estimated) | 0.54 | 8.41 (estimated) | 1,315,000 (estimated) |

Note.—Precipitation varies from 20 to 30 inches per annum in normal years. Ice conditions obtained at this station, subsequent to December 9, and also practically throughout the whole month of February.

This station gives the discharge of the Kettle river as it flows north, across the international boundary before joining the North Fork of the Kettle river at Grand Forks.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Niskonlith Creek at mouth, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | | | | 0.42 | 0.6 | | | 0.32 | 0.1 |
| 2 | 1.05 | 17.5 | | | | | | | | | | |
| 3 | | | 0.57 | 2.6 | 0.50 | 1.4 | | | 0.40 | 0.4 | | |
| 4 | | | | | | | | | | | 0.40 | 0.40 |
| 5 | | | | | | | 0.42 | 0.6 | | | | |
| 6 | 1.0 | 15.0 | 0.57 | 2.6 | | | | | 0.40 | 0.4 | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | 0.47 | 1.0 | | | | | 0.60 | 3.0 |
| 9 | 0.45 | 0.9 | | | | | 0.42 | 0.6 | 0.40 | 0.4 | | |
| 10 | | | 0.85 | 9.8 | | | | | | | | |
| 11 | | | | | 0.45 | 0.9 | | | | | 0.40 | 0.4 |
| 12 | | | | | | | 0.45 | 0.9 | | | | |
| 13 | 0.45 | 0.9 | 0.85 | 9.8 | | | | | 0.40 | 0.4 | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | 0.42 | 0.6 | | | | | | |
| 16 | | | | | | | 0.42 | 0.6 | | | 0.40 | |
| 17 | 0.45 | 0.9 | 0.55 | 2.2 | | | | | 0.37 | 0.3 | | |
| 18 | | | | | 0.40 | 0.4 | | | | | 0.40 | |
| 19 | | | | | | | 0.40 | 0.4 | | | | |
| 20 | | | | | | | | | | | | |
| 21 | 0.45 | 0.9 | 0.55 | 2.2 | 0.37 | 0.3 | | | 0.30 | 0.1 | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | | 0.40 | 0.4 | | | 0.37 | |
| 24 | 0.40 | 0.4 | 0.52 | 1.8 | | | | | 0.35 | 0.2 | | |
| 25 | | | | | 0.32 | 0.2 | | | | | | |
| 26 | | | | | | | | | | | 0.35 | |
| 27 | | | | | | | | | | | | |
| 28 | 0.40 | 0.4 | 0.52 | 1.8 | 0.40 | 0.4 | 0.40 | 0.4 | 0.35 | 0.2 | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | 0.40 | 0.4 | | | | |
| 31 | 0.57 | 2.6 | 0.52 | 1.8 | | | | | | | | |

Under too.

MONTHLY DISCHARGE of Niskonlith Creek at mouth, for 1914.

(Drainage area, 50 square miles.)

| Month. | DISCHARGE IN SECOND-FEET | | | | RUN-OFF. | |
|------------|--------------------------|---------|-------|------------------|-----------------------------------|---------------------|
| | Maximum | Minimum | Mean | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 26.5 | 3.0 | 9.4 | 0.19 | 0.21 | 559 |
| May | 66.0 | 35.6 | 51.4 | 1.03 | 1.19 | 3,160 |
| June | 57.0 | 17.5 | 38.5 | 0.77 | 0.86 | 2,291 |
| July | 17.5 | 0.4 | 4.4 | 0.09 | 0.10 | 270 |
| August | 9.8 | 1.8 | 3.8 | 0.08 | 0.09 | 234 |
| September | 1.4 | 0.2 | 0.65 | 0.01 | 0.01 | 39 |
| October | 0.9 | 0.4 | 0.54 | 0.01 | 0.01 | 33 |
| November | 0.4 | 0.1 | 0.30 | 0.01 | 0.01 | 18 |
| December | | | | | | |
| The period | 66.0 | 0.1 | 13.62 | 0.27 | 2.48 | 6,604 |

NOTE.—Precipitation varies from 10 to 20 inches.

Dam on Niskonlith lake controls the stream's regimen

OKANAGAN RIVER (2052).

Location.—Near Fairview, Water District No. 4.

Records Available.—April 8 to December 31, 1914.

Drainage Area.—Three thousand square miles.

Gauge.—Standard 6-foot vertical staff gauge, read four times a week by A. S. Hatfield.

Channel.—Average width of channel at measuring section is seventy-five feet. Channel above the station curves gently from the southwest. Below the station the channel is straight for 50 feet, then curves to the southeast.

Bed of stream is composed of gravel and sand, and constant shifting of channel at the station has resulted.

Discharge Measurements.—Meterings have been obtained at all stages of flow, and were well distributed throughout at the season, thus making it possible to make adjustments for the change in area due to scouring.

Winter Flow.—No winter records have been made on this stream, but partial ice conditions are believed to exist during January and February.

Accuracy.—In spite of the adverse conditions, results are thought to be fairly high. It will be necessary to establish a new station in 1915.

OKANAGAN RIVER.

The Okanagan river rises in Okanagan lake, a large body of water, 65 miles long and from 2 to 4 miles wide and, flowing southerly for 100 miles, joins the Columbia in the state of Washington. From Penticton, where the river leaves Okanagan lake, to the international boundary is 35 miles. Through the greater part of this distance it is a sluggish stream, expanding into three lakes. Dog lake, Masseaux lake, and Osoyoos lake. The international boundary cuts across the lower part of the last. From the falls at the foot of Dog lake to Vaseaux lake, a distance of 5 miles, the stream is swift.

The drainage basin in Canada has an area of 3,000 square miles. It is a long narrow valley, lying north-and-south in the eastern portion of the dry belt, and includes one of the best fruit-growing districts in British Columbia. Irrigation is of course necessary, the precipitation varying from 15 inches in the northern parts to 8 inches in the south. The mountains on both sides of the valley are steep in most places, timbered on the upper slopes. The lower slopes are partly covered with light timber, but for the most part are open and covered with bunch grass. In places they give way to rolling hills and benches. The soil is fine and very fertile when it can be watered. On the whole the land is difficult of irrigation, chiefly because of its topography, and also because there are no large tributaries north of the border. The inflowing streams are small, flowing in deep gulleys from the mountains. In the spring they are rushing torrents. In the summer they become nearly dry, and in most cases there are no storage possibilities. From Penticton south to the boundary there are large tracts of land which only need a water supply to become exceedingly productive.

The one large tributary of the Okanagan is the Similkameen. It flows in from the west, and though it joins the Okanagan at Oroville, in Washington, by far the major part of its course is through Canadian territory. It is a larger stream than the Okanagan above the junction, but lacks the steadying influence of any lakes and is therefore subject to much greater fluctuations. In 1914 the minimum flow of the Okanagan was 485 second-feet, and of the Similkameen 160 second-feet. The maximum flow, however, was 1,500 second-feet for the Okanagan and 15,500 for the Similkameen.

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There is one good power site on the Okanagan. This is at Okanagan falls, at the foot of Dog lake. The river here is narrowly confined between two rock bluffs, and drops some 15 feet almost vertically. Dog lake and Okanagan lake act as natural reservoirs. A cheap development is possible at this point, and it is probable that here is a solution of the irrigation problem for large areas at present barren.

A gauge was installed on the Okanagan near Fairview by the Hydrographic Survey in April, 1914. Daily flow records are available from that date.

DISCHARGE MEASUREMENTS of Okanagan River near Fairview, for 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|-------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 7..... | E. M. Dann..... | 1505 | 75 | 276 | 1.90 | 0.71 | 524 |
| May 11..... | K. Chisholm..... | 1505 | 75 | 456 | 2.63 | 2.43 | 1,199 |
| June 5..... | "..... | 1913 | 76 | 520 | 2.76 | 3.28 | 1,436 |
| July 17..... | "..... | 1913 | 76 | 454 | 2.51 | 2.27 | 1,138 |
| Aug. 14..... | E. M. Dann..... | 1913 | 75 | 354 | 2.20 | 1.31 | 796 |
| " 28..... | K. G. Chisholm..... | 1913 | 76 | 320 | 2.20 | 1.08 | 704 |
| Nov. 21..... | "..... | 1673 | 74 | 309 | 1.85 | 0.84 | 575 |

Shifting condition of channel existed during freshet season.

DAILY GAUGE HEIGHT AND DISCHARGE of Okanagan River near Fairview, for 1914.

| DAY. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1.80 | 945 | | |
| 2 | | | | | 3.10 | 1,385 |
| 3 | | | | | 3.20 | 1,415 |
| 4 | | | | | 3.25 | 1,425 |
| 5 | | | 2.10 | 1,065 | 3.30 | 1,440 |
| 6 | | | 2.10 | 1,065 | 3.30 | 1,440 |
| 7 | | | 2.05 | 1,045 | | |
| 8 | 0.80 | 560 | 2.10 | 1,065 | | |
| 9 | 0.85 | 575 | | | 3.30 | 1,440 |
| 10 | 0.90 | 595 | | | 3.20 | 1,415 |
| 11 | | | | | 3.20 | 1,415 |
| 12 | | | 2.50 | 1,210 | 3.20 | 1,415 |
| 13 | | | 2.60 | 1,240 | | |
| 14 | 1.20 | 710 | 2.90 | 1,325 | | |
| 15 | 1.30 | 750 | 3.30 | 1,440 | | |
| 16 | 1.35 | 765 | | | 3.50 | 1,500 |
| 17 | 1.35 | 765 | | | 3.50 | 1,500 |
| 18 | | | | | 3.40 | 1,470 |
| 19 | | | 3.20 | 1,415 | 3.30 | 1,440 |
| 20 | | | 3.10 | 1,385 | | |
| 21 | 1.45 | 805 | 3.20 | 1,415 | | |
| 22 | 1.45 | 805 | 3.20 | 1,415 | | |
| 23 | 1.50 | 825 | | | 3.20 | 1,415 |
| 24 | 1.60 | 865 | | | 3.20 | 1,415 |
| 25 | | | | | 3.10 | 1,385 |
| 26 | | | 3.00 | 1,355 | 3.00 | 1,355 |
| 27 | | | 3.00 | 1,355 | | |
| 28 | 1.65 | 885 | 2.90 | 1,325 | | |
| 29 | 1.60 | 865 | 2.90 | 1,325 | | |
| 30 | 1.65 | 885 | | | 2.85 | 1,310 |

DAILY GAUGE HEIGHT AND DISCHARGE of Okanagan River near Fairview, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-80 | 1,295 | | | 1-07 | 685 | 0-90 | 610 | | | 0-82 | 575 |
| 2 | 2-75 | 1,280 | | | 1-05 | 673 | | | 0-90 | 610 | 0-85 | 583 |
| 3 | 2-70 | 1,270 | | | 1-02 | 665 | | | 0-90 | 610 | 0-87 | 595 |
| 4 | | | 1-60 | 890 | | | | | 0-90 | 610 | | |
| 5 | | | 1-57 | 890 | | | 0-85 | 585 | 0-90 | 610 | | |
| 6 | 2-50 | 1,210 | 1-55 | 880 | | | 0-84 | 585 | | | | |
| 7 | 2-45 | 1,195 | | | 0-92 | 620 | 0-82 | 575 | | | 0-85 | 585 |
| 8 | 2-40 | 1,180 | | | 0-90 | 610 | 0-82 | 575 | | | 0-85 | 585 |
| 9 | 2-35 | 1,165 | | | 0-87 | 595 | | | 0-90 | 610 | 0-82 | 575 |
| 10 | | | 1-45 | 840 | 0-85 | 585 | | | 0-90 | 610 | 0-82 | 575 |
| 11 | | | 1-42 | 830 | | | | | 0-90 | 610 | | |
| 12 | | | 1-40 | 820 | 0-79 | 565 | 0-85 | 585 | 0-90 | 610 | | |
| 13 | 2-30 | 1,155 | 1-37 | 810 | 0-80 | 565 | 0-85 | 585 | | | | |
| 14 | 2-30 | 1,155 | | | 0-82 | 575 | 0-85 | 585 | | | 0-80 | 565 |
| 15 | 2-27 | 1,145 | | | 0-82 | 575 | 0-85 | 585 | | | 0-80 | 565 |
| 16 | 2-25 | 1,140 | | | | | | | 0-90 | 610 | 0-77 | 550 |
| 17 | | | 1-30 | 785 | | | | | 0-87 | 595 | 0-77 | 550 |
| 18 | | | 1-27 | 775 | | | | | 0-87 | 595 | | |
| 19 | | | 1-25 | 765 | | | 0-95 | 630 | 0-87 | 595 | | |
| 20 | 2-12 | 1,085 | 1-22 | 755 | | | 0-94 | 630 | | | | |
| 21 | 2-10 | 1,075 | | | 0-80 | 565 | 0-92 | 620 | | | 0-72 | 530 |
| 22 | 2-07 | 1,065 | | | 0-80 | 565 | 0-92 | 620 | | | 0-67 | 505 |
| 23 | 2-05 | 1,055 | | | 0-80 | 565 | | | 0-85 | 585 | 0-65 | 495 |
| 24 | 2-00 | 1,040 | 1-12 | 720 | 0-80 | 565 | | | 0-82 | 575 | 0-65 | 495 |
| 25 | | | 1-10 | 715 | | | | | 0-80 | 565 | | |
| 26 | | | 1-07 | 705 | | | 0-88 | 600 | 0-80 | 565 | | |
| 27 | 1-90 | 1,000 | 1-05 | 695 | | | 0-88 | 600 | | | | |
| 28 | 1-85 | 980 | | | 0-92 | 620 | 0-88 | 600 | | | 0-62 | 485 |
| 29 | 1-80 | 965 | | | 0-92 | 620 | 0-88 | 600 | | | 0-62 | 485 |
| 30 | 1-77 | 955 | | | 0-90 | 610 | | | 0-82 | 575 | 0-62 | 485 |
| 31 | | | 1-10 | 700 | | | | | | | 0-62 | 485 |

MONTHLY DISCHARGE of Okanagan River near Fairview, for 1914.

(Drainage area, 3,000 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 885 | 560 | 761 | 0-25 | 0-28 | 45,282 |
| May | 1,440 | 945 | 1,258 | 0-42 | 0-48 | 77,350 |
| June | 1,500 | 1,310 | 1,421 | 0-47 | 0-52 | 84,559 |
| July | 1,295 | 955 | 1,120 | 0-37 | 0-43 | 68,870 |
| August | 900 | 695 | 792 | 0-26 | 0-30 | 48,698 |
| September | 685 | 565 | 601 | 0-20 | 0-22 | 35,762 |
| October | 630 | 575 | 598-2 | 0-20 | 0-23 | 36,782 |
| November | 610 | 565 | 596-5 | 0-20 | 0-22 | 35,494 |
| December | 595 | 485 | 540-5 | 0-15 | 0-17 | 33,234 |
| The period | 1,500 | 485 | 854-2 | 0-28 | 2-85 | 466,031 |

NOTE.—This station was established in April, 1914, having for the period a maximum flow of 1,500 sec.-feet in June and a minimum of 485 sec.-feet in December.

The flow is regulated by Okanagan and Dog lakes, from which there is a large evaporation loss. The precipitation is low, varying from 10 to 30 inches annually.

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SIMILKAMEEN RIVER (2054).

Location.—Near Ashnola, Water District No. 4.

Records Available.—April 8 to December 31, 1914.

Drainage Area.—Two thousand three hundred and twenty square miles.

Gauge.—Standard vertical staff gauge, read by Harry Atherton of Keremeos.

Channel.—Average width of channel at measuring section is about 210 feet. Channel is straight at the station. Bed of stream is very rocky and water turbulent even at low stages.

Discharge Measurements.—The gauge-height discharge curve is very well rated by well-distributed meterings.

Winter Flow.—No winter records have been made on this stream. Partial ice conditions are believed to exist during January and February.

Accuracy.—Very high. Results compiled from a well-rated curve.

SIMILKAMEEN RIVER.

Two main streams unite at Princeton to form the Similkameen, the South Similkameen and the Tulameen rivers. The South Similkameen has its source in the Hogameen mountains of the Cascade range, some 15 miles south of the International boundary, and flows north for a distance of 50 miles to its confluence. The Tulameen heads in the Hope mountains of the Cascade range, and starting in a northerly direction, follows a curved line, finally joining in a southeast direction. Very few elevations are established in this district. The peaks of the Cascades at the international boundary obtain an altitude of 8,000 feet above sea-level. The highest points in the Hope range are not over 7,600 feet. At the confluence of the two main tributaries at Princeton the elevation of the river is about 2,100 feet. From this point the Similkameen flows in a southeasterly direction for 75 miles, joining the Okanagan at Oroville. The last 20 miles are in the state of Washington.

From the right going upstream, the main tributaries are: Keremeos creek at Keremeos, Twenty-mile creek at Hedley, and Five-mile and One-mile creeks at 5 and 1 miles, respectively, downstream from Princeton. From the left, Ashnola river at Ashnola, half-way between Keremeos and Hedley, is the chief tributary.

The Similkameen river is fairly swift. In the 25 miles between Princeton and Hedley the drop is 440 feet, giving an average grade of 19 feet to the mile. Approximately the same grade obtains for the 20 miles from Hedley to Keremeos. Below this point to the boundary the current is sluggish.

At Hedley the Daly Reduction Company, owners of the Nickle Plate mine, have taken advantage of the steep grade of the river for power purposes. By means of a dam and 3 miles of flume, a maximum head of 67 feet is obtained and a plant installed with a capacity of 1,800 horse-power. This new plant takes the place of a combination plant using water from twenty-mile creek and auxiliary steam engine. The plant was completed in 1914, and can deliver 2,000 horse-power. The drainage basin above the international boundary has an area of about 2,500 square miles. The river cuts right across the southern part of the Okanagan range in a V-shaped glacial valley, the mountains on each side rising steeply to an altitude of 5,000 or 6,000 feet. The southern slopes of the hills are open and grassy in many places, and afford excellent pasturage and, where timbered, the trees do not grow close together. The northern slopes are more thickly wooded. Precipitation varies with the altitudes. The average of four years at Hedley gives 10.8 inches for the annual precipitation. At the Nickel Plate mine, 3 miles away and 4,000 feet higher up, figures for the same four years show 21.8 inches.

6 GEORGE V, A. 1915

The only agricultural land in the district is the bottom of the valley. Above Keremees this is very narrow, but below that point it widens out and there are a number of fine fruit ranches.

A regular gauging station was established at Ashnola, below Ashnola creek, on April 8, 1914.

DISCHARGE MEASUREMENTS of Similkameen River at Ashnola, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Feet. | Ft. per sec. | |
| April 8..... | E. M. Dann..... | 1505 | 162 | 552 | 3-41 | 1-35 | 1,881 |
| May 10..... | K. G. Chisholm..... | 1505 | 202 | 1,097 | 6-69 | 3-92 | 7,326 |
| June 10..... | "..... | 1913 | 195 | 913 | 5-14 | 3-10 | 4,697 |
| " 24..... | "..... | 1913 | 194 | 856 | 4-51 | 2-75 | 3,870 |
| July 29..... | "..... | 1913 | 171 | 382.5 | 2-24 | 0-30 | 858 |
| Aug. 30..... | "..... | 1913 | 125 | 261 | 1-38 | -0-47 | 360 |
| Nov. 23..... | "..... | 1673 | 132 | 375 | 2-04 | 0-20 | 764 |

DAILY GAUGE HEIGHT AND DISCHARGE of Similkameen River at Ashnola, for 1914.

| Day. | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 2-75 | 3,870 | 4-50 | 9,450 |
| 2..... | | | 3-50 | 5,880 | 5-20 | 12,020 |
| 3..... | | | 4-35 | 8,895 | 5-45 | 12,945 |
| 4..... | | | 3-95 | 7,440 | 4-60 | 9,815 |
| 5..... | | | 3-55 | 6,045 | 4-00 | 7,620 |
| 6..... | | | 3-30 | 5,270 | 3-65 | 6,380 |
| 7..... | | | 3-25 | 5,125 | 3-45 | 5,725 |
| 8..... | 1-35 | 1,880 | 3-15 | 4,840 | 3-25 | 5,125 |
| 9..... | 1-65 | 2,240 | 3-35 | 5,420 | 3-20 | 4,980 |
| 10..... | 1-85 | 2,480 | 3-80 | 6,900 | 3-15 | 4,840 |
| 11..... | | | 2-15 | 2,870 | 4-05 | 7,800 |
| 12..... | | | 2-15 | 2,870 | 4-30 | 8,710 |
| 13..... | | | 2-35 | 3,165 | 4-60 | 9,815 |
| 14..... | | | 2-65 | 3,675 | 5-50 | 13,130 |
| 15..... | | | 2-90 | 4,185 | 6-15 | 15,525 |
| 16..... | | | 2-85 | 4,075 | 5-90 | 14,600 |
| 17..... | | | 2-65 | 3,675 | 5-35 | 12,575 |
| 18..... | | | 2-40 | 3,240 | 5-25 | 12,205 |
| 19..... | | | 2-40 | 3,240 | 4-85 | 10,735 |
| 20..... | | | 2-95 | 4,305 | 4-75 | 10,365 |
| 21..... | | | 2-55 | 3,490 | 4-90 | 10,920 |
| 22..... | | | 2-35 | 3,165 | 4-90 | 10,920 |
| 23..... | | | 2-35 | 3,165 | 5-25 | 12,205 |
| 24..... | | | 2-20 | 2,940 | 5-35 | 12,575 |
| 25..... | | | 2-10 | 2,800 | 5-10 | 11,655 |
| 26..... | | | 2-10 | 2,800 | 4-50 | 9,450 |
| 27..... | | | 2-15 | 2,870 | 4-05 | 7,800 |
| 28..... | | | 2-10 | 2,800 | 3-80 | 6,900 |
| 29..... | | | 1-95 | 2,605 | 3-60 | 6,210 |
| 30..... | | | 2-10 | 2,800 | 3-65 | 6,380 |
| 31..... | | | | | 4-00 | 7,620 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Similkameen River at Ashnola, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height- | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2.90 | 4,185 | 0.20 | 795 | -0.53 | 338 | -0.15 | 543 | 0.1 | 720 | 0.00 | 645 |
| 2 | 2.80 | 3,970 | 0.15 | 755 | -0.58 | 318 | -0.18 | 523 | 0.12 | 735 | 0.05 | 680 |
| 3 | 2.65 | 3,675 | 0.15 | 755 | -0.55 | 330 | -0.20 | 510 | 0.0 | 645 | 0.17 | 755 |
| 4 | 2.70 | 3,770 | 0.10 | 710 | -0.55 | 330 | -0.18 | 523 | 0.02 | 660 | 0.02 | 645 |
| 5 | 2.45 | 3,320 | 0.05 | 680 | -0.55 | 330 | -0.19 | 516 | 0.1 | 720 | -0.07 | 610 |
| 6 | 2.15 | 2,870 | 0.05 | 680 | -0.55 | 330 | -0.22 | 498 | 0.15 | 757 | 0.00 | 645 |
| 7 | 2.00 | 2,670 | 0.05 | 680 | -0.50 | 350 | -0.20 | 516 | 0.12 | 735 | -0.05 | 610 |
| 8 | 1.90 | 2,545 | 0.00 | 645 | -0.45 | 375 | -0.24 | 486 | 0.20 | 795 | 0.15 | 547 |
| 9 | 2.00 | 2,670 | 0.00 | 645 | -0.40 | 400 | -0.28 | 462 | 0.25 | 832 | -0.37 | 425 |
| 10 | 1.75 | 2,360 | 0.00 | 645 | 0.30 | 450 | -0.22 | 498 | 0.27 | 847 | -0.55 | 330 |
| 11 | 1.60 | 2,180 | 0.00 | 645 | -0.30 | 450 | -0.12 | 562 | 0.27 | 847 | -0.77 | 250 |
| 12 | 1.40 | 1,940 | -0.10 | 575 | -0.30 | 450 | -0.04 | 617 | 0.47 | 1,009 | -0.90 | 190 |
| 13 | 1.50 | 2,060 | -0.10 | 575 | -0.30 | 450 | -0.04 | 617 | 0.37 | 926 | -0.95 | 175 |
| 14 | 1.70 | 2,300 | -0.10 | 575 | -0.30 | 450 | -0.06 | 603 | 0.17 | 772 | -1.00 | 160 |
| 15 | 1.50 | 2,060 | -0.20 | 510 | -0.33 | 435 | -0.12 | 562 | 0.15 | 757 | -0.85 | 210 |
| 16 | 1.30 | 1,820 | -0.20 | 510 | -0.33 | 435 | -0.20 | 510 | 0.02 | 660 | -0.67 | 290 |
| 17 | 1.15 | 1,655 | -0.20 | 510 | -0.28 | 462 | -0.19 | 516 | -0.03 | 624 | -0.60 | 310 |
| 18 | 1.10 | 1,605 | -0.15 | 545 | -0.28 | 462 | -0.07 | 596 | -0.00 | 645 | -0.52 | 350 |
| 19 | 1.00 | 1,500 | -0.15 | 545 | -0.13 | 556 | -0.04 | 617 | -0.00 | 645 | -0.40 | 400 |
| 20 | 0.90 | 1,400 | -0.20 | 510 | 0.05 | 680 | -0.00 | 645 | 0.01 | 652 | -0.32 | 450 |
| 21 | 0.85 | 1,350 | -0.20 | 510 | -0.03 | 624 | -0.00 | 645 | 0.25 | 832 | -0.32 | 450 |
| 22 | 0.75 | 1,255 | -0.20 | 510 | -0.13 | 556 | -0.03 | 624 | 0.27 | 847 | -0.32 | 450 |
| 23 | 0.60 | 1,120 | -0.30 | 450 | -0.19 | 516 | -0.10 | 575 | 0.20 | 795 | -0.30 | 450 |
| 24 | 0.55 | 1,075 | -0.40 | 400 | -0.20 | 510 | -0.08 | 589 | 0.15 | 757 | -0.30 | 450 |
| 25 | 0.50 | 1,035 | -0.45 | 375 | -0.28 | 462 | -0.00 | 645 | 0.15 | 757 | -0.27 | 480 |
| 26 | 0.50 | 1,035 | -0.50 | 350 | -0.23 | 492 | -0.00 | 645 | 0.37 | 926 | -0.25 | 480 |
| 27 | 0.40 | 950 | -0.50 | 350 | -0.04 | 617 | -0.08 | 589 | 0.47 | 1,009 | -0.27 | 480 |
| 28 | 0.35 | 910 | -0.55 | 330 | 0.10 | 720 | -0.00 | 645 | 0.42 | 967 | -0.27 | 480 |
| 29 | 0.30 | 870 | -0.55 | 330 | -0.03 | 624 | -0.03 | 624 | 0.37 | 926 | -0.27 | 480 |
| 30 | 0.25 | 830 | -0.45 | 375 | -0.13 | 556 | 0.01 | 720 | 0.20 | 795 | -0.25 | 480 |
| 31 | 0.20 | 795 | -0.53 | 338 | | | 0.01 | 720 | | | -0.22 | 510 |

MONTHLY DISCHARGE of Similkameen River at Ashnola, for 1914.

(Drainage area, 2,320 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|---------|------------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet |
| April | 4,305 | 1,880 | 3,101.5 | 1.33 | 1.5 | 184,550 |
| May | 15,525 | 3,870 | 8,960.6 | 3.86 | 4.45 | 550,966 |
| June | 12,945 | 3,770 | 6,839.5 | 2.95 | 3.20 | 406,980 |
| July | 4,185 | 795 | 1,993.0 | 0.86 | 0.09 | 122,543 |
| August | 795 | 330 | 542.5 | 0.23 | 0.26 | 33,357 |
| September | 720 | 318 | 468.6 | 0.02 | 0.2 | 27,884 |
| October | 720 | 462 | 578.5 | 0.25 | 0.29 | 35,570 |
| November | 1,009 | 624 | 786.5 | 0.33 | 0.37 | 46,804 |
| December | 755 | 160 | 447.3 | 0.19 | 0.22 | 27,503 |
| The period | 15,525 | 160 | 2,635.3 | 1.13 | 11.57 | 1,436,152 |

NOTE.—Precipitation over this drainage area varies from a minimum of 10 inches to a maximum of 50 inches at higher altitudes.

During 1914 the greatest flow recorded was 15,525 cubic feet per second, in May, and the lowest 163 cubic feet per second in December.

SHUSWAP RIVER AT ENDERBY (2034).

Location.—Section 26, township 18, range 9, west of the 6th meridian.

Records Available.—August 25 to November 10, 1911; March 1 to December 31, 1912; April 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand six hundred and fifty square miles.

Gauge.—A standard vertical staff gauge situated on highway bridge, and read daily by D. Mowat.

Channel.—The channel is straight for 100 yards at section. The rise and fall of the river each year is about 10 feet. Control is good.

Winter Conditions.—Ice conditions prevail some years during January and February. During 1914 river remained open throughout.

Discharge Measurements.—Eleven well-distributed measurements have been obtained during 1911, 1912, and 1913. Measurements were made from boat except during high water, when they were made from bridge.

Accuracy.—The returns are considered to be accurate, and are within 10 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Shuswap River near Enderby, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Fect. | Sec.-ft. | Fect. | Sec.-ft. | Fect. | Sec.-ft. | Fect. | Sec.-ft. | Fect. | Sec.-ft. | Fect. | Sec.-ft. |
| 1..... | 2-60 | 965 | 2-60 | 965 | 2-25 | 775 | 2-70 | 1,020 | ..... | 4,540 | 9-05 | 8,695 |
| 2..... | 2-60 | 965 | 2-55 | 937 | 2-25 | 775 | 2-70 | 1,020 | ..... | 4,820 | 9-10 | 8,770 |
| 3..... | 2-60 | 965 | 2-60 | 965 | 2-25 | 775 | 2-75 | 1,050 | 6-60 | 5,100 | 9-70 | 9,720 |
| 4..... | 2-60 | 965 | 3-05 | 1,242 | 2-25 | 775 | 2-85 | 1,110 | 6-80 | 5,383 | 10-0 | 10,200 |
| 5..... | 2-60 | 965 | 3-20 | 1,340 | 2-25 | 775 | 3-00 | 1,210 | 6-85 | 5,450 | 10-2 | 10,500 |
| 6..... | 2-70 | 1,020 | 3-30 | 1,410 | 2-20 | 749 | 3-30 | 1,410 | 6-90 | 5,520 | 10-35 | 10,800 |
| 7..... | 2-85 | 1,110 | 3-30 | 1,410 | 2-20 | 749 | 3-55 | 1,600 | 7-00 | 5,660 | 10-35 | 10,800 |
| 8..... | 2-85 | 1,110 | 3-35 | 1,445 | 2-20 | 749 | 3-70 | 1,720 | 7-10 | 5,803 | 10-2 | 10,500 |
| 9..... | 2-85 | 1,110 | 3-35 | 1,445 | 2-20 | 749 | 3-85 | 1,845 | 7-30 | 6,080 | 10-0 | 10,200 |
| 10..... | 2-85 | 1,110 | 3-35 | 1,445 | 2-20 | 749 | 3-90 | 1,890 | 7-60 | 6,520 | 9-9 | 10,000 |
| 11..... | 2-80 | 1,080 | 3-35 | 1,445 | 2-20 | 749 | 3-95 | 1,935 | 7-70 | 6,660 | 9-8 | 9,880 |
| 12..... | 2-80 | 1,080 | 3-35 | 1,445 | 2-20 | 749 | 4-10 | 2,080 | 7-80 | 6,800 | 9-8 | 9,880 |
| 13..... | 2-80 | 1,080 | 3-35 | 1,445 | 2-15 | 724 | 4-25 | 2,230 | 8-00 | 7,100 | 9-8 | 9,880 |
| 14..... | 2-80 | 1,080 | 3-35 | 1,445 | 2-15 | 724 | 4-50 | 2,480 | 8-30 | 7,540 | 9-9 | 10,000 |
| 15..... | 2-80 | 1,080 | 3-00 | 1,210 | 2-25 | 775 | 4-60 | 2,590 | 8-70 | 8,140 | 10-1 | 10,300 |
| 16..... | 2-75 | 1,050 | 3-00 | 1,210 | 2-30 | 801 | 5-05 | 3,100 | 9-10 | 8,770 | 10-3 | 10,700 |
| 17..... | 2-75 | 1,050 | 2-90 | 1,140 | 2-30 | 801 | 5-10 | 3,160 | 9-40 | 9,240 | 10-6 | 11,300 |
| 18..... | 2-70 | 1,020 | 2-75 | 1,050 | 2-35 | 828 | 5-20 | 3,280 | 9-60 | 9,560 | 10-75 | 11,500 |
| 19..... | 2-70 | 1,020 | 2-75 | 1,050 | 2-45 | 882 | 5-45 | 3,580 | 9-70 | 9,720 | 10-9 | 11,700 |
| 20..... | 2-70 | 1,020 | 2-70 | 1,020 | 2-45 | 882 | 5-65 | 3,825 | 9-80 | 9,880 | 11-1 | 12,000 |
| 21..... | 2-70 | 1,020 | 2-50 | 910 | 2-50 | 910 | 5-80 | 4,020 | 9-80 | 9,880 | 11-0 | 11,900 |
| 22..... | 2-70 | 1,020 | 2-25 | 775 | 2-50 | 910 | 5-80 | 4,020 | 9-75 | 9,800 | 10-9 | 11,700 |
| 23..... | 2-70 | 1,020 | 2-25 | 775 | 2-55 | 937 | 5-90 | 4,150 | 9-83 | 9,880 | 10-7 | 11,400 |
| 24..... | 2-65 | 992 | 2-30 | 801 | 2-65 | 992 | 6-00 | 4,280 | 9-80 | 9,880 | 10-5 | 11,110 |
| 25..... | 2-65 | 992 | 2-30 | 801 | 2-70 | 1,020 | 6-05 | 4,345 | 9-90 | 10,000 | 10-3 | 10,700 |
| 26..... | 2-65 | 992 | 2-25 | 775 | 2-65 | 992 | 6-05 | 4,345 | 9-90 | 10,000 | 10-2 | 10,500 |
| 27..... | 2-60 | 965 | 2-25 | 775 | 2-60 | 965 | 6-05 | 4,345 | 9-80 | 9,880 | 10-0 | 10,200 |
| 28..... | 2-55 | 937 | 2-25 | 775 | 2-60 | 965 | 6-05 | 4,345 | 9-70 | 9,720 | 9-9 | 10,000 |
| 29..... | 3-10 | 1,270 | | | 2-60 | 965 | 6-05 | 4,345 | 9-50 | 9,400 | 9-8 | 9,880 |
| 30..... | 3-25 | 1,375 | | | 2-60 | 965 | 6-05 | 4,345 | 9-30 | 9,080 | 9-8 | 9,880 |
| 31..... | 3-10 | 1,270 | | | 2-65 | 992 | | | 9-05 | 8,695 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Shuswap River near Enderby, for 1914—(Concluded).

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
| | Gauge Height | Dis-charge. | Gauge Height | Dis-charge. | Gauge Height | Dis-charge. | Gauge Height | Dis-charge. | Gauge Height | Dis-charge. | Gauge Height | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 9-80 | 9,880 | 5-20 | 3,280 | 3-30 | 1,410 | 3-45 | 1,520 | 4-65 | 2,030 | 3-60 | 1,800 |
| 2 | 9-80 | 9,880 | 5-10 | 3,160 | 3-20 | 1,340 | 3-50 | 1,560 | 4-30 | 2,280 | 3-75 | 1,760 |
| 3 | 9-80 | 9,880 | 5-00 | 3,040 | 3-20 | 1,340 | 3-55 | 1,600 | 4-30 | 2,280 | 3-75 | 1,760 |
| 4 | 9-80 | 9,880 | 4-90 | 2,920 | 3-15 | 1,303 | 3-55 | 1,600 | 4-30 | 2,280 | 3-70 | 1,720 |
| 5 | 9-70 | 9,720 | 4-80 | 2,810 | 3-10 | 1,270 | 3-55 | 1,600 | 4-30 | 2,280 | 3-65 | 1,680 |
| 6 | 9-70 | 9,720 | 4-70 | 2,700 | 3-05 | 1,242 | 3-55 | 1,600 | 4-40 | 2,380 | 3-60 | 1,640 |
| 7 | 9-65 | 9,640 | 4-70 | 2,700 | 3-05 | 1,242 | 3-55 | 1,600 | 4-40 | 2,380 | 3-60 | 1,640 |
| 8 | 9-50 | 9,400 | 4-60 | 2,590 | 3-05 | 1,242 | 3-55 | 1,600 | 4-40 | 2,380 | 3-55 | 1,600 |
| 9 | 9-30 | 9,080 | 4-50 | 2,480 | 3-05 | 1,242 | 3-55 | 1,600 | 4-45 | 2,430 | 3-50 | 1,560 |
| 10 | 9-05 | 8,695 | 4-40 | 2,380 | 3-05 | 1,242 | 3-55 | 1,600 | 4-45 | 2,430 | 3-40 | 1,480 |
| 11 | 8-90 | 8,460 | 4-40 | 2,380 | 3-05 | 1,242 | 3-60 | 1,640 | 4-50 | 2,480 | 3-35 | 1,445 |
| 12 | 8-70 | 8,140 | 4-25 | 2,230 | 3-05 | 1,242 | 3-65 | 1,680 | 4-50 | 2,480 | 3-30 | 1,410 |
| 13 | 8-45 | 7,765 | 4-20 | 2,180 | 3-05 | 1,242 | 3-70 | 1,720 | 4-45 | 2,430 | 3-30 | 1,410 |
| 14 | 8-30 | 7,540 | 4-15 | 2,130 | 3-05 | 1,242 | 3-70 | 1,720 | 4-40 | 2,380 | 3-20 | 1,340 |
| 15 | 8-30 | 7,540 | 4-05 | 2,030 | 3-00 | 1,210 | 3-70 | 1,720 | 4-40 | 2,380 | 3-10 | 1,270 |
| 16 | 8-30 | 7,540 | 4-00 | 1,980 | 3-00 | 1,210 | 3-70 | 1,720 | 4-30 | 2,280 | 3-05 | 1,242 |
| 17 | 8-10 | 7,250 | 4-00 | 1,980 | 3-00 | 1,210 | 4-15 | 2,130 | 4-30 | 2,280 | 3-00 | 1,210 |
| 18 | 7-95 | 7,025 | 3-95 | 1,935 | 3-00 | 1,210 | 4-10 | 2,080 | 4-20 | 2,180 | 2-90 | 1,140 |
| 19 | 7-75 | 6,730 | 3-90 | 1,890 | 3-10 | 1,270 | 4-10 | 2,080 | 4-20 | 2,180 | 2-90 | 1,140 |
| 20 | 7-70 | 6,660 | 3-85 | 1,800 | 3-10 | 1,270 | 4-10 | 2,080 | 4-20 | 2,180 | 2-90 | 1,140 |
| 21 | 7-30 | 6,080 | 3-80 | 1,800 | 3-10 | 1,270 | 4-10 | 2,080 | 4-10 | 2,080 | 2-90 | 1,140 |
| 22 | 7-20 | 5,940 | 3-70 | 1,720 | 3-05 | 1,242 | 4-10 | 2,080 | 4-00 | 1,980 | 2-80 | 1,080 |
| 23 | 7-00 | 5,660 | 3-65 | 1,680 | 3-05 | 1,242 | 4-10 | 2,080 | 4-00 | 1,980 | 2-80 | 1,080 |
| 24 | 6-80 | 5,380 | 3-60 | 1,640 | 3-05 | 1,242 | 4-10 | 2,080 | 3-95 | 1,935 | 2-75 | 1,030 |
| 25 | 6-60 | 5,100 | 3-60 | 1,640 | 3-05 | 1,242 | 4-10 | 2,080 | 3-95 | 1,935 | 2-75 | 1,030 |
| 26 | 6-30 | 4,680 | 3-60 | 1,640 | 3-05 | 1,242 | 4-10 | 2,080 | 3-90 | 1,890 | 2-75 | 1,030 |
| 27 | 6-10 | 4,410 | 3-50 | 1,560 | 3-20 | 1,340 | 4-05 | 2,030 | 3-90 | 1,890 | 2-80 | 1,080 |
| 28 | 5-90 | 4,150 | 3-40 | 1,480 | 3-50 | 1,560 | 4-05 | 2,030 | 3-85 | 1,845 | 2-75 | 1,030 |
| 29 | 5-70 | 3,890 | 3-40 | 1,480 | 3-40 | 1,480 | 4-00 | 1,980 | 3-85 | 1,845 | 2-75 | 1,030 |
| 30 | 5-50 | 3,640 | 3-40 | 1,480 | 3-40 | 1,480 | 4-00 | 1,980 | 3-85 | 1,845 | 2-70 | 1,020 |
| 31 | 5-40 | 3,520 | 3-30 | 1,410 | ..... | ..... | 4-05 | 2,030 | ..... | ..... | 2-70 | 1,020 |

For meterings and further hydrographic data see Water Resources Papers Nos. 1 and 8.

MONTHLY DISCHARGE of Shuswap River at Enderby, for 1914.

(Drainage area, 1,650 square miles)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | RAINFALL. |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | Inches. |
| January..... | 1,375 | 937 | 1,055 | 0.6 | 0.7 | 64,870 | 2.52 |
| February..... | 1,445 | 775 | 1,123 | 0.7 | 0.7 | 62,368 | 1.60 |
| March..... | 1,020 | 724 | 843 | 0.5 | 0.6 | 51,834 | 0.82 |
| April..... | 4,345 | 1,020 | 2,822 | 1.7 | 1.9 | 167,920 | 1.02 |
| May..... | 10,000 | 4,540 | 7,887 | 4.8 | 5.5 | 484,954 | 1.12 |
| June..... | 12,000 | 8,695 | 10,486 | 6.3 | 7.0 | 623,960 | 1.68 |
| July..... | 9,880 | 3,520 | 7,189 | 4.3 | 5.0 | 442,038 | 0.88 |
| August..... | 3,280 | 1,410 | 2,133 | 1.3 | 1.5 | 131,153 | 0.27 |
| September..... | 1,560 | 1,210 | 1,285 | 0.8 | 0.9 | 76,365 | 2.49 |
| October..... | 2,130 | 1,520 | 1,838 | 1.1 | 1.3 | 113,016 | 1.23 |
| November..... | 2,480 | 1,845 | 2,187 | 1.3 | 1.4 | 130,133 | 1.89 |
| December..... | 1,800 | 1,020 | 1,324 | 0.8 | 0.9 | 81,408 | ..... |
| The year..... | 12,000 | 724 | 3,348 | 22.0 | 27.4 | 2,430,019 | ..... |

NOTE.—Rainfall data are from Monthly Weather Review of the Meteorological Service of the Department of Marine and Fisheries, and show the monthly precipitation at Enderby. The mean precipitation over the whole drainage area is probably considerably higher than the precipitation at Enderby.

The total mean annual precipitation at Enderby for a period of eight years is given as 20.71 inches.

SOUTH SIMILKAMEEN RIVER (2063).

Location.—At Princeton, Water District No. 4.

Records Available.—May 14 to December 19, 1914.

Drainage Area.—Four hundred and forty square miles.

Gauge.—Standard chain gauge situated on the highway bridge, read by J. J. Priest of Princeton.

Channel.—Average width of channel at measuring section is about 170 feet. Above section channel is curved for about 200 feet and straight for about 100 feet below station. Bed of stream is of gravel, with a few boulders, and not liable to shift.

Discharge Measurements.—Made with cable and 30-pound weight. The gauge-height discharge curve is very well rated by well-distributed meterings.

Winter Flow.—No winter records have been made on this stream, but partial ice conditions are believed to exist during January and February.

Accuracy.—High results compiled from a well-rated curve.

SOUTH SIMILKAMEEN.

Two branches, Pasayten river and Roche river, unite to form the South Similkameen river. The Pasayten is about 25 miles long. It heads among the high mountains of the Cascade range, south of the border, and flows due north to the junction. It is a rapid stream flowing through a narrow deep valley. The Roche river heads in six branches in the Hogameen range, which joins the divide between the Skagit and the South Similkameen rivers. It pursues a northeasterly course to the junction through a wide flat valley, whose sides slope easily back to a height of 2,000 feet above the river. From the junction the South Similkameen flows due north for 25 miles to its confluence with the Tulameen at Princeton to form the Similkameen river. In this distance it is joined by Copper creek and Whipsaw creek from the west, and several small unnamed creeks.

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From the junction of the Roche and the Pasayten to the confluence of Whipsaw creek, a distance of 18 miles, the South Similkameen flows through a deep narrow canyon on a grade of over 40 feet to the mile. Good power sites are numerous. Below Whipsaw creek to the mouth the grade is flatter and the valley wider.

The area of the drainage basin above the mouth is 440 miles, covering a rough mountainous country of rugged scenic beauty. The new motor road connecting Princeton with the coast follows the valley of the South Similkameen and Roche river across the headwaters of the Skagit and down Silver creek to the Fraser near Hope. It is at present under construction.

Large deposits of copper occur on Copper mountain, 10 miles south of Princeton. The British Columbia Copper Company has large holdings here and is doing some development work.

A gauging station was established on the South Similkameen near the mouth on May 14, 1914. Six discharge measurements and daily gauging were taken during the season.

DISCHARGE MEASUREMENTS of South Similkameen River at Princeton, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| May 13..... | K. G. Chisholm..... | 1505 | 192 | 476 | 7.33 | 3.88 | 3,490 |
| June 15..... | " | 1913 | 191 | 511 | 6.25 | 4.00 | 3,194 |
| " 22..... | " | 1913 | 191 | 380 | 4.74 | 3.31 | 1,799 |
| July 27..... | " | 1913 | 106 | 117 | 3.58 | 1.88 | 419 |
| Sept. 2..... | " | 1913 | 112 | 145 | 1.02 | 1.23 | 149 |
| Nov. 28..... | " | 1673 | 125 | 121 | 3.19 | 1.85 | 386 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of South Similkameen River at Princeton, for 1914.

| Day. | May. | | June. | |
|------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | | 4-05 | 3,665 |
| 2. | | | 4-67 | 6,037 |
| 3. | | | 4-62 | 5,832 |
| 4. | | | 3-97 | 3,407 |
| 5. | | | 3-71 | 2,661 |
| 6. | | | 3-51 | 2,187 |
| 7. | | | 3-31 | 1,803 |
| 8. | | | 3-25 | 1,705 |
| 9. | | | 3-22 | 1,657 |
| 10. | | | 3-20 | 1,625 |
| 11. | | | 3-14 | 1,541 |
| 12. | | | 3-31 | 1,803 |
| 13. | | | 3-69 | 2,610 |
| 14. | 4-46 | 5,178 | 3-80 | 2,900 |
| 15. | 4-75 | 6,365 | 4-00 | 3,500 |
| 16. | 4-60 | 5,750 | 4-23 | 4,291 |
| 17. | 4-40 | 4,935 | 4-19 | 4,145 |
| 18. | 4-25 | 4,365 | 4-00 | 3,500 |
| 19. | 3-98 | 3,438 | 3-95 | 3,345 |
| 20. | 4-07 | 3,731 | 3-70 | 2,635 |
| 21. | 3-97 | 3,407 | 3-42 | 2,005 |
| 22. | 3-98 | 3,438 | 3-27 | 1,737 |
| 23. | 4-08 | 3,764 | 3-03 | 1,397 |
| 24. | 4-37 | 4,820 | 2-98 | 1,337 |
| 25. | 4-10 | 3,830 | 3-03 | 1,397 |
| 26. | 3-82 | 2,958 | 3-07 | 1,447 |
| 27. | 3-69 | 2,610 | 3-17 | 1,583 |
| 28. | 3-46 | 2,085 | 3-12 | 1,513 |
| 29. | 3-24 | 1,689 | 3-11 | 1,499 |
| 30. | 3-38 | 1,929 | 3-16 | 1,569 |
| 31. | 3-38 | 1,929 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of South Similkameen River at Princeton, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 3-33 | 1,839 | 1-73 | 335 | 1-23 | 144 | 1-40 | 200 | 1-64 | 293 | 1-47 | 224 |
| 2 | 3-30 | 1,785 | 1-70 | 320 | 1-23 | 144 | 1-38 | 193 | 1-75 | 345 | 1-42 | 207 |
| 3 | 3-25 | 1,705 | 1-68 | 311 | 1-23 | 144 | 1-38 | 193 | 1-82 | 381 | 1-50 | 235 |
| 4 | 3-12 | 1,513 | 1-61 | 280 | 1-22 | 141 | 1-35 | 182 | 1-84 | 392 | 1-55 | 255 |
| 5 | 3-00 | 1,360 | 1-61 | 280 | 1-20 | 135 | 1-32 | 172 | 1-95 | 455 | 1-50 | 235 |
| 6 | 2-91 | 1,256 | 1-62 | 284 | 1-20 | 135 | 1-30 | 165 | 1-82 | 381 | 1-45 | 217 |
| 7 | 2-86 | 1,201 | 1-61 | 280 | 1-30 | 165 | 1-32 | 172 | 1-67 | 306 | 1-45 | 217 |
| 8 | 2-73 | 1,065 | 1-61 | 280 | 1-45 | 217 | 1-30 | 165 | 1-60 | 275 | 1-40 | 200 |
| 9 | 2-68 | 1,017 | 1-61 | 280 | 1-48 | 228 | 1-35 | 182 | 1-60 | 275 | 1-22 | 141 |
| 10 | 2-68 | 1,017 | 1-60 | 275 | 1-40 | 200 | 1-42 | 207 | 1-62 | 284 | 1-20 | 135 |
| 11 | 2-65 | 990 | 1-59 | 271 | 1-40 | 200 | 1-50 | 235 | 1-65 | 298 | 1-20 | 135 |
| 12 | 2-65 | 990 | 1-57 | 263 | 1-38 | 193 | 1-50 | 235 | 1-72 | 330 | 1-20 | 135 |
| 13 | 2-67 | 1,008 | 1-54 | 251 | 1-35 | 182 | 1-45 | 217 | 1-72 | 330 | 1-20 | 135 |
| 14 | 2-66 | 999 | 1-54 | 251 | 1-35 | 182 | 1-42 | 207 | 1-68 | 311 | 1-25 | 580 |
| 15 | 2-51 | 864 | 1-52 | 243 | 1-38 | 193 | 1-35 | 182 | 1-50 | 235 | 2-15 | 580 |
| 16 | 2-42 | 787 | 1-48 | 228 | 1-35 | 182 | 1-32 | 172 | 1-54 | 251 | 2-20 | 615 |
| 17 | 2-35 | 730 | 1-48 | 228 | 1-35 | 182 | 1-32 | 172 | 1-60 | 275 | 2-20 | 615 |
| 18 | 2-32 | 706 | 1-47 | 224 | 1-40 | 200 | 1-34 | 179 | 1-52 | 243 | 2-20 | 615 |
| 19 | 2-30 | 690 | 1-47 | 224 | 1-50 | 235 | 1-51 | 263 | 1-45 | 217 | 2-20 | 615 |
| 20 | 2-20 | 615 | 1-46 | 221 | 1-58 | 267 | 1-52 | 243 | 1-45 | 217 | ..... | ..... |
| 21 | 2-14 | 573 | 1-52 | 243 | 1-50 | 235 | 1-47 | 224 | 1-50 | 235 | ..... | ..... |
| 22 | 2-10 | 545 | 1-45 | 217 | 1-45 | 217 | 1-45 | 217 | 1-56 | 259 | ..... | ..... |
| 23 | 2-05 | 515 | 1-41 | 203 | 1-40 | 200 | 1-42 | 207 | 1-65 | 298 | ..... | ..... |
| 24 | 2-00 | 485 | 1-39 | 197 | 1-38 | 193 | 1-42 | 207 | 1-70 | 320 | ..... | ..... |
| 25 | 1-82 | 381 | 1-35 | 182 | 1-40 | 200 | 1-40 | 200 | 1-78 | 360 | ..... | ..... |
| 26 | 1-95 | 455 | 1-32 | 172 | 1-42 | 207 | 1-40 | 200 | 1-90 | 425 | ..... | ..... |
| 27 | 1-90 | 425 | 1-30 | 165 | 1-50 | 235 | 1-36 | 186 | 1-90 | 425 | ..... | ..... |
| 28 | 1-87 | 408 | 1-27 | 156 | 1-58 | 267 | 1-35 | 182 | 1-85 | 397 | ..... | ..... |
| 29 | 1-75 | 345 | 1-25 | 150 | 1-52 | 243 | 1-35 | 182 | 1-70 | 320 | ..... | ..... |
| 30 | 1-78 | 360 | 1-24 | 147 | 1-40 | 200 | 1-45 | 217 | 1-50 | 235 | ..... | ..... |
| 31 | 1-78 | 360 | 1-23 | 144 | ..... | ..... | 1-60 | 275 | ..... | ..... | ..... | ..... |

MONTHLY DISCHARGE of South Similkameen River at Princeton, for 1914.

(Drainage area, 440 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June..... | 6,037 | 1,337 | 2,544.4 | 5.5 | 6.1 | 151,404 |
| July..... | 1,839 | 345 | 870.6 | 1.9 | 2.2 | 53,531 |
| August..... | 335 | 144 | 235.0 | 0.5 | 0.6 | 14,450 |
| September..... | 267 | 135 | 195.5 | 0.44 | 0.40 | 11,633 |
| October..... | 275 | 165 | 201.0 | 0.46 | 0.5 | 12,359 |
| November..... | 455 | 217 | 312.2 | 0.71 | 0.79 | 18,577 |
| The period.. | 6,037 | 135 | 726.4 | 1.58 | 10.68 | 261,954 |

NOTE.—Mean annual precipitation probably varies from 15 inches near the stream's confluence with the Tulameen river, to 50 inches at its source on the Skagit River divide.
Ice conditions existed subsequent to December 19.

TULAMEEN RIVER (2062).

Location.—At Coalmont, Water District No. 4.

Records Available.—May 15 to October 3, 1914.

Drainage Area.—Four hundred square miles.

Gauge.—Chain gauge. Brass jack chain and 3-pound sash weight on downstream side of bridge at measuring station, read by J. J. Currie.

Channel.—Straight for about 700 feet at measuring section. Bed of stream of clean gravel and permanent. Average width about 100 feet.

Discharge Measurements.—The gauge-height discharge curve is fairly well rated by well-distributed meterings.

Winter Flow.—No winter records have been made. Ice conditions prevail on this river during the latter part of December, January and February.

Accuracy.—Fairly high, results compiled from a well-rated curve.

TULAMEEN RIVER.

The Tulameen river is one of the largest tributaries of the Similkameen. It rises in many small branches in the eastern slopes of the Hope Range, whose summits are over 7,000 feet in altitude, and joins the Similkameen at Princeton at an elevation of 2,100 feet, after a course of 45 miles.

The tributaries entering from the right going upstream are China creek, Cook creek, Otter creek, Bear creek, Eagle creek, and Siwash creek. Otter creek is the largest tributary. It flows in from the north through a broad deep valley, joining at the village of Tulameen, 16 miles from Princeton. From the left going upstream are Granite creek, Cedar creek, Slate creek, and Champion creek. The largest and most important of these, because of the gold and platinum deposits found in its bed, is Granite creek, which flows in at the village of Granite Creek, 10 miles up the Tulameen valley from Princeton. In 1885, on the discovery of gold in Granite creek, the Granite Creek rush took place. In 1886 the village of Granite Creek had a population of over 2,000, and in that year \$193,000 worth of gold and platinum were washed out of the gravel of the creek. Since 1888 placer mining has been on the decline, and at present the population of Granite Creek consists of five or six families.

There are valuable deposits of coal, copper, and gold in the district. Two coal mines are at present working on a small scale, at Princeton and at Coalmont. The Kettle Valley and Great Northern railroads connecting this country with Vancouver, which are now near completion, should give rise to an era of development and progress. The amount of arable land is practically negligible. The valleys of the river and its tributaries, with the exception of the Tulameen for 3 miles between Slate creek and Otter creek, are very narrow. They are, in fact, little better than deep narrow canyons. The valley of the Otter and the portion of the Tulameen mentioned above, which are much wider, contain some good land. It is nearly all homesteaded. The altitude is over 2,700 feet, and although this is below the limit of cultivation in other parts of the Interior Plateau region, yet wheat cannot be successfully grown.

The climate over the drainage basin of the Tulameen and its tributaries is variable, depending on the locality. At Princeton the mean annual precipitation is 13 inches. At Coalmont and Tulameen and in the Otter valley it is probably not much greater than this. In the higher altitudes and on the eastern slopes of the Hope mountains at the sources of the Tulameen it varies from 20 to 40 inches per annum. Temperatures are not extreme, and are as a rule lower than the Okanagan country. The yearly average is about 45° F. In Bulletin 27 of the Bureau of Provincial Information, the maximum is shown as being 101° in 1897 and 1904, and the minimum as 45° in 1907.

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The current of the Tulameen is swift except in the three miles between Slate and Otter creek, where it meanders through a valley about one-half mile wide, at grade of 29 feet to the mile. Otter creek has a peculiarly sluggish current for a mountain stream. For a distance of 8 miles north from the mouth it has an average grade of 12 feet to the mile. About 4 miles of this distance is occupied by lakes. Above Slate creek the Tulameen has a grade of about 100 feet to the mile, and rushes through a narrow steep-sided canyon. Its tributaries, excepting the Otter, are very swift and occupy deep V-shaped valleys. The country is heavily wooded on the upper slopes. On the lower slopes the trees grow in more open order. Fir, yellow pine, lodgepole pine, and poplar predominate.

A regular gauging station was established at Coalmont on May 14, 1914. Records are available from that date.

DISCHARGE MEASUREMENTS of Tulameen River at Coalmont, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|-----------------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Nov. 16..... | E. M. Dann & K. G. Chisholm | 1,505 | 136 | 228 | 3.76 | — | 846 ¹ |
| 1914. | | | | | | | |
| May 14..... | K. G. Chisholm..... | 1,505 | 143 | 601.0 | 8.82 | 4.03 | 5,300 |
| June 14..... | "..... | 1,913 | 118 | 387.0 | 4.60 | 2.50 | 1,778 |
| " 19..... | "..... | 1,913 | 118 | 333.0 | 3.84 | 2.10 | 1,277 |
| July 26..... | "..... | 1,913 | 80 | 130.0 | 1.05 | 0.13 | 137 |
| Sept. 4..... | "..... | 1,913 | 80 | 95.5 | 0.41 | -0.30 | 39 ² |
| Nov. 25..... | "..... | 1,673 | 102 | 181.0 | 1.73 | 0.63 | 314 |

¹Measurement made at Princeton before regular station was established.

²Not at regular section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Tulameen River near Coalmont, for 1914.

| DAY. | May. | | June. | |
|------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 3-00 | 2,660 |
| 2 | | | 3-10 | 2,870 |
| 3 | | | 3-00 | 2,660 |
| 4 | | | 2-75 | 2,185 |
| 5 | | | 2-35 | 1,575 |
| 6 | | | 2-20 | 1,390 |
| 7 | | | 2-05 | 1,230 |
| 8 | | | 2-00 | 1,180 |
| 9 | | | 1-95 | 1,135 |
| 10 | | | 2-00 | 1,180 |
| 11 | | | 2-10 | 1,280 |
| 12 | | | 2-50 | 1,780 |
| 13 | | | 2-55 | 1,855 |
| 14 | | | 2-65 | 2,015 |
| 15 | 3-80 | 4,640 | 2-75 | 2,185 |
| 16 | 3-80 | 4,640 | 2-95 | 2,560 |
| 17 | 3-35 | 3,450 | 2-65 | 2,015 |
| 18 | 3-35 | 3,450 | 2-35 | 1,575 |
| 19 | 3-35 | 3,450 | 2-05 | 1,230 |
| 20 | 3-30 | 3,325 | 1-80 | 1,005 |
| 21 | 3-30 | 3,325 | 1-60 | 850 |
| 22 | 3-25 | 3,205 | 1-60 | 850 |
| 23 | 3-55 | 3,960 | 1-50 | 780 |
| 24 | 3-70 | 4,365 | 1-60 | 850 |
| 25 | 3-30 | 3,325 | 1-75 | 965 |
| 26 | 2-70 | 2,100 | 1-55 | 815 |
| 27 | 2-60 | 1,935 | 1-65 | 885 |
| 28 | 2-55 | 1,850 | 1-40 | 715 |
| 29 | 2-10 | 1,280 | 1-50 | 780 |
| 30 | 2-30 | 1,510 | 1-60 | 850 |
| 31 | 2-70 | 2,100 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Tulameen River near Coalmont, for 1914.

| DAY. | July. | | August. | | September. | | October. | |
|------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|
| | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.45 | 745 | -0.05 | 90 | | | 0.10 | 125 |
| 2 | 1.35 | 685 | -0.15 | 70 | | | -0.10 | 80 |
| 3 | 1.54 | 745 | -0.15 | 70 | | | | 0 |
| 4 | 1.30 | 655 | -0.15 | 70 | -0.30 | 40 | | 0 |
| 5 | 1.15 | 565 | -0.15 | 70 | -0.30 | 40 | | 0 |
| 6 | 0.95 | 455 | -0.15 | 70 | -0.30 | 40 | | 0 |
| 7 | 0.95 | 455 | -0.15 | 70 | -0.30 | 40 | | 0 |
| 8 | 0.95 | 455 | -0.05 | 90 | -0.30 | 40 | | 0 |
| 9 | 0.85 | 405 | -0.05 | 90 | -0.20 | 60 | | 0 |
| 10 | 0.90 | 430 | -0.15 | 70 | 0.10 | 125 | | 0 |
| 11 | 0.90 | 430 | -0.15 | 70 | 0.10 | 125 | | 0 |
| 12 | | | -0.15 | 70 | -0.10 | 80 | 0.10 | 125 |
| 13 | 0.50 | 250 | -0.15 | 70 | 0.10 | 125 | 0.10 | 125 |
| 14 | 0.50 | 250 | -0.15 | 70 | 0.20 | 150 | | 0 |
| 15 | 0.60 | 290 | -0.15 | 70 | 0 | 100 | | 0 |
| 16 | 0.50 | 250 | -0.15 | 70 | -0.10 | 80 | | 0 |
| 17 | 0.40 | 215 | | | -0.10 | 80 | | 0 |
| 18 | 0.40 | 215 | | | 0.10 | 125 | 0.10 | 125 |
| 19 | 0.40 | 215 | | | 0.10 | 125 | 0.20 | 150 |
| 20 | 0.40 | 215 | | | 0.10 | 125 | 0.20 | 150 |
| 21 | 0.25 | 165 | | | 0.10 | 125 | 0.10 | 125 |
| 22 | 0.25 | 165 | | | 0.10 | 125 | 0.20 | 150 |
| 23 | 0.15 | 135 | | | -0.20 | 60 | | 0 |
| 24 | 0.15 | 135 | | | -0.20 | 60 | -0.20 | 60 |
| 25 | 0.15 | 135 | | | -0.10 | 80 | -0.10 | 80 |
| 26 | 0.10 | 125 | | | 0.10 | 125 | | 0 |
| 27 | 0.10 | 125 | | | 0 | 100 | | 0 |
| 28 | 0.10 | 125 | | | 0.10 | 125 | 0.10 | 125 |
| 29 | 0.00 | 100 | | | -0.10 | 80 | 0.20 | 150 |
| 30 | -0.10 | 80 | | | 0 | 100 | 0.10 | 125 |
| 31 | -0.10 | 80 | | | | | 0.30 | 180 |

MONTHLY DISCHARGE of Tulameen River near Coalmont, for 1914.

(Drainage area, 400 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|---------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| May | 4,640 | 1,280 | 3,053.5 | 7.63 | 8.80 | 187,753 |
| June | 2,870 | 780 | 1,463.5 | 3.66 | 4.08 | 87,086 |
| July | 745 | 80 | 309.8 | 0.77 | 0.89 | 19,050 |
| August | 90 | 70 | 73.7 | 0.18 | 0.21 | 4,531 |
| September | 125 | 40 | 91.8 | 0.23 | 0.26 | 5,462 |
| October | 180 | 60 | 112.1 | 0.28 | 0.32 | 6,893 |
| The period | 4,640 | 40 | 850.7 | 2.12 | 14.56 | 310,775 |

NOTE.—Mean annual precipitation at the stream's confluence with the South Similkameen river is probably 15 inches; at the head waters of Granite creek and Tulameen river proper it is probably 50 inches, while at the head of Otter creek it is probably 20 to 30 inches per annum.

Ice conditions existed during part of November and December.

THOMPSON RIVER AT CHASE, B.C. (2042).

Location.—Section 35, township 21, range 13, west 6th meridian.

Records Available.—April 22 to July 31, 1911; April 10 to December 31, 1912; April 12 to December 31, 1913; January 1 to 27, March 24 to December 31, 1914.

Drainage Area.—Seven thousand square miles.

Gauge.—A vertical staff gauge is used and read daily by Mr. F. J. Gook of the Adams River Lumber Company, Chase, B.C.

Channel.—Above the measuring section river broadens out into Little Shuswap lake. Below section river is straight for 200 yards.

Discharge Measurements.—Eleven well-distributed measurements have been made during 1911, 1912, and 1913. Measurements are made from cable and boat.

Winter Conditions.—The Thompson, at Chase, remains partially open throughout the year except during severe winters.

Accuracy.—The accuracy of returns is considered to be high, and should fall within 10 per cent.

DISCHARGE MEASUREMENTS of Thompson River, at Chase, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|----------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Mar. 31..... | E. M. Dann & K. G. Chisholm..... | 1505 | 358 | 3,610 | 0.77 | 2.58 | 2,794 |

For further hydrographic data see Water Resources Paper Nos. 1 and 8.

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DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River, near Chase, B.C.,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|--------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | |
| 1. | 2-95 | 3,390 | | | | 2,940 | 2-50 | 2,720 | 5-20 | 9,160 | 8-85 | 24,225 | |
| 2. | 2-95 | 3,390 | | | | 2,940 | 2-50 | 2,720 | 5-35 | 9,670 | 8-85 | 24,225 | |
| 3. | 2-95 | 3,390 | | | | 2,940 | 2-60 | 2,840 | 5-60 | 10,540 | 8-95 | 24,675 | |
| 4. | 2-95 | 3,390 | | | | 2,940 | 2-60 | 2,840 | 5-58 | 11,445 | 9-15 | 25,575 | |
| 5. | 2-95 | 3,390 | | | | 2,830 | 2-60 | 2,840 | 6-00 | 12,000 | 9-25 | 26,035 | |
| 6. | 2-95 | 3,390 | | | | 2,830 | 2-60 | 2,840 | 6-15 | 12,600 | 9-30 | 26,250 | |
| 7. | 2-95 | 3,390 | | | | 2,830 | 2-60 | 2,840 | 6-25 | 13,000 | 9-30 | 26,250 | |
| 8. | 2-95 | 3,390 | | | | 2,830 | 2-60 | 2,840 | 6-35 | 13,400 | 9-35 | 26,475 | |
| 9. | 2-95 | 3,390 | | | | 2,830 | 2-65 | 2,910 | 6-40 | 13,600 | 9-40 | 26,700 | |
| 10. | 2-95 | 3,390 | | | | 2,830 | 2-75 | 3,050 | 6-50 | 14,000 | 9-40 | 26,700 | |
| 11. | 2-95 | 3,390 | | | | 2,830 | 2-85 | 3,210 | 6-60 | 14,400 | 9-40 | 26,700 | |
| 12. | 3-05 | 3,570 | | | | 2,830 | 3-05 | 3,570 | 6-75 | 15,000 | 9-50 | 27,150 | |
| 13. | 3-05 | 3,570 | | | | 2,830 | 3-20 | 3,840 | 6-55 | 15,400 | 9-55 | 27,375 | |
| 14. | 3-05 | 3,570 | | | | 2,730 | 3-35 | 4,120 | 7-05 | 16,200 | 9-60 | 27,600 | |
| 15. | 3-05 | 3,570 | | | | 2,730 | 3-40 | 4,220 | 7-25 | 17,025 | 9-75 | 28,275 | |
| 16. | 3-05 | 3,570 | | | | 2,730 | 3-55 | 4,565 | 7-55 | 18,375 | 9-85 | 28,725 | |
| 17. | 3-05 | 3,570 | | | | 2,730 | 3-65 | 4,795 | 7-65 | 18,825 | 10-00 | 29,450 | |
| 18. | 3-05 | 3,570 | | | | 2,730 | 3-85 | 5,275 | 7-75 | 19,275 | 10-05 | 29,700 | |
| 19. | 3-05 | 3,570 | | | | 2,730 | 4-00 | 5,650 | 7-90 | 19,950 | 10-10 | 29,950 | |
| 20. | 3-05 | 3,570 | | | | 2,730 | 4-05 | 5,775 | 8-05 | 20,625 | 10-20 | 30,450 | |
| 21. | 3-05 | 3,570 | | | | 2,730 | 4-15 | 6,025 | 8-15 | 21,075 | 10-20 | 30,450 | |
| 22. | 3-05 | 3,570 | | | | 2,730 | 4-30 | 6,430 | 8-25 | 21,525 | 10-20 | 30,450 | |
| 23. | 3-05 | 3,570 | | | | 2,730 | 4-40 | 6,710 | 8-35 | 21,975 | 10-15 | 30,200 | |
| 24. | 3-05 | 3,570 | | | | 2-50 | 2,720 | 4-40 | 6,710 | 8-55 | 22,875 | 10-10 | 29,950 |
| 25. | 3-05 | 3,570 | | | | 2-50 | 2,720 | 4-50 | 7,000 | | 23,550 | 10-10 | 29,950 |
| 26. | 3-05 | 3,570 | | | | 2-50 | 2,720 | 4-65 | 7,450 | 8-80 | 24,000 | 10-10 | 29,950 |
| 27. | 2-95 | 3,390 | 2-75 | 3,050 | | 2-50 | 2,720 | 4-80 | 7,910 | 8-80 | 24,000 | 10-10 | 29,950 |
| 28. | | | | | | 2-50 | 2,720 | 4-90 | 8,220 | 8-90 | 24,450 | 10-10 | 29,950 |
| 29. | | | | | | 2-50 | 2,720 | 5-05 | 8,685 | 8-90 | 24,450 | 10-10 | 29,950 |
| 30. | | | | | | 2-50 | 2,720 | 5-15 | 9,000 | 8-90 | 24,450 | 10-10 | 29,950 |
| 31. | | | | | | 2-50 | 2,720 | | | 8-90 | 24,450 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River, near Chase, B.C.,
for 1914—Concluded.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| 1. | 10-10 | 29,950 | 7-05 | 16,200 | 4-60 | 7,300 | 4-00 | 5,650 | 4-50 | 7,000 | 4-45 | 6,855 |
| 2. | 10-10 | 29,950 | 7-00 | 16,000 | 4-60 | 7,300 | 4-00 | 5,650 | 4-60 | 7,300 | 4-40 | 6,710 |
| 3. | 10-10 | 29,950 | 6-85 | 15,400 | 4-60 | 7,300 | 4-00 | 5,650 | 4-60 | 7,300 | 4-40 | 6,710 |
| 4. | 10-10 | 29,950 | 6-75 | 15,000 | 4-50 | 7,000 | 4-00 | 5,650 | 4-65 | 7,450 | 4-35 | 6,570 |
| 5. | 10-10 | 29,950 | 6-55 | 14,200 | 4-50 | 7,000 | 4-00 | 5,650 | 4-70 | 7,600 | 4-30 | 6,430 |
| 6. | 10-10 | 29,950 | 6-45 | 13,800 | 4-50 | 7,000 | 3-90 | 5,400 | 4-75 | 7,755 | 4-30 | 6,430 |
| 7. | 10-10 | 29,450 | 6-30 | 13,200 | 4-50 | 7,000 | 3-90 | 5,400 | 4-80 | 7,910 | 4-30 | 6,430 |
| 8. | 9-90 | 28,950 | 6-25 | 13,000 | 4-40 | 6,710 | 3-90 | 5,400 | 4-80 | 7,910 | 4-30 | 6,430 |
| 9. | 9-80 | 28,500 | 6-20 | 12,800 | 4-40 | 6,710 | 3-90 | 5,400 | 4-80 | 7,910 | 4-20 | 6,150 |
| 10. | 9-65 | 27,825 | 6-10 | 12,400 | 4-40 | 6,710 | 3-90 | 5,400 | 4-90 | 8,220 | 4-20 | 6,150 |
| 11. | 9-50 | 27,150 | 5-95 | 11,815 | 4-40 | 6,710 | 3-90 | 5,400 | 4-90 | 8,220 | 4-10 | 5,900 |
| 12. | 9-45 | 26,925 | 5-85 | 11,445 | 4-40 | 6,710 | 3-90 | 5,400 | 4-90 | 8,220 | 4-10 | 5,900 |
| 13. | 9-40 | 26,700 | 5-75 | 11,075 | 4-30 | 6,430 | 3-90 | 5,400 | 4-90 | 8,220 | 4-00 | 5,900 |
| 14. | 9-30 | 26,250 | 5-70 | 10,890 | 4-25 | 6,290 | 4-00 | 5,650 | 4-90 | 8,220 | 4-00 | 6,650 |
| 15. | 9-30 | 26,250 | 5-65 | 10,715 | 4-20 | 6,150 | 4-00 | 5,650 | 4-90 | 8,220 | 4-00 | 5,650 |
| 16. | 9-30 | 26,250 | 5-60 | 10,540 | 4-20 | 6,150 | 4-00 | 5,650 | 4-90 | 8,220 | 4-00 | 5,650 |
| 17. | 9-25 | 26,025 | 5-50 | 10,190 | 4-10 | 5,900 | 4-00 | 5,650 | 4-80 | 7,910 | 3-90 | 5,400 |
| 18. | 9-15 | 25,575 | 5-40 | 9,840 | 4-10 | 5,900 | 4-10 | 5,900 | 4-80 | 7,910 | 3-90 | 5,400 |
| 19. | 9-05 | 25,125 | 5-30 | 9,500 | 4-00 | 5,650 | 4-15 | 6,025 | 4-80 | 7,910 | 3-80 | 5,150 |
| 20. | 8-90 | 24,450 | 5-20 | 9,160 | 4-00 | 5,650 | 4-20 | 6,150 | 4-80 | 7,910 | 3-75 | 5,030 |
| 21. | 8-75 | 23,775 | 5-20 | 9,160 | 4-00 | 5,650 | 4-30 | 6,430 | 4-75 | 7,755 | 3-70 | 4,910 |
| 22. | 8-70 | 23,550 | 5-15 | 9,000 | 4-00 | 5,650 | 4-30 | 6,430 | 4-70 | 7,600 | 3-70 | 4,910 |
| 23. | 8-60 | 23,100 | 5-10 | 8,840 | 3-95 | 5,525 | 4-30 | 6,430 | 4-70 | 7,600 | 3-70 | 4,910 |
| 24. | 8-45 | 22,425 | 5-00 | 8,530 | 3-90 | 5,400 | 4-35 | 6,570 | 4-65 | 7,450 | 3-60 | 4,810 |
| 25. | 8-25 | 21,525 | 4-90 | 8,220 | 3-90 | 5,400 | 4-40 | 6,710 | 4-60 | 7,300 | 3-60 | 4,680 |
| 26. | 8-05 | 20,625 | 4-85 | 8,065 | 3-90 | 5,400 | 4-40 | 6,710 | 4-60 | 7,300 | 3-55 | 4,565 |
| 27. | 7-85 | 19,725 | 4-80 | 7,910 | 3-90 | 5,400 | 4-40 | 6,710 | 4-50 | 7,000 | 3-50 | 4,450 |
| 28. | 7-65 | 18,825 | 4-70 | 7,600 | 3-90 | 5,400 | 4-40 | 6,710 | 4-50 | 7,000 | 3-50 | 4,450 |
| 29. | 7-45 | 17,925 | 4-65 | 7,450 | 4-00 | 5,650 | 4-40 | 6,710 | 4-50 | 7,000 | 3-50 | 4,450 |
| 30. | 7-25 | 17,025 | 4-60 | 7,300 | 4-00 | 5,650 | 4-40 | 6,710 | 4-50 | 7,000 | 3-50 | 4,450 |
| 31. | 7-20 | 16,800 | 4-60 | 7,300 | | | 4-45 | 6,855 | | | 3-50 | 4,450 |

MONTHLY DISCHARGE of Thompson River, at Chase, B.C.,
for 1914.

(Drainage area, 7,000 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 3,570 | 3,390 | 3,490 | 0.5 | 0.6 | 214,590 |
| February | | | 3,000 | 0.4 | 0.4 | 166,600 |
| March | | | 2,783 | 0.4 | 0.4 | 171,123 |
| April | 9,000 | 2,720 | 4,920 | 0.7 | 0.8 | 292,760 |
| May | 24,450 | 9,160 | 17,783 | 2.5 | 2.9 | 1,093,363 |
| June | 30,450 | 24,225 | 28,107 | 4.0 | 4.5 | 1,672,540 |
| July | 29,950 | 16,800 | 25,175 | 3.6 | 4.1 | 1,547,950 |
| August | 16,200 | 7,300 | 10,856 | 1.5 | 1.7 | 667,516 |
| September | 7,300 | 5,400 | 6,223 | 0.9 | 1.0 | 370,300 |
| October | 6,855 | 5,400 | 5,971 | 0.8 | 0.9 | 367,142 |
| November | 8,220 | 7,000 | 7,677 | 1.1 | 1.2 | 456,813 |
| December | 6,855 | 4,450 | 5,521 | 0.8 | 0.9 | 339,472 |
| The year | 30,450 | 2,720 | 10,125 | 1.4 | 19.4 | 7,360,169 |

NOTE.—Flow for February estimated. River under entire or partial ice conditions.

Precipitation probably varies from 20 inches per annum at Chase to 50 inches at the headwaters of streams tributary to Shuswap lake.

SESSIONAL PAPER No. 25e

BARNES CREEK (2001).

Location.—Section 23, township 20, range 24, west 6th meridian.

Records Available.—April 26 to September 14, 1912; May 1 to December 14, 1913; April 1 to December 8, 1914.

Drainage Area.—Thirty-eight square miles.

Gauge.—Standard vertical staff gauge, graduated in feet and tenths, and read daily by C. Crossley.

Channel.—Channel straight at measuring section. Velocity medium. Bed of stream permanent.

Discharge Measurements.—Discharge measurements made by wading at all stages, except very high water.

Winter Flow.—Ice conditions prevail on this stream during January, February, and March.

Accuracy.—The accuracy of results is considered to be very high, the curve being well defined, and returns should fall within 5 per cent.

DISCHARGE MEASUREMENTS of Barnes Creek above Barnes Lake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| July 6..... | C. B. Corbould..... | 1915 | 8 | 4 | 0.75 | 0.35 | 3.0 |

Station rated during 1911 and 1912. Hydrographer notes that on July 6 no water was running into Barnes lake, it was all going down the gulch to the Tiffin ranch, and other lands just east of Ashcroft. He estimates that about .5 sec.-feet is flowing out of Barnes lake and joining Barnes creek one-quarter mile below.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Barnes Creek, Barnes Lake, for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-30 | 2-0 | 0-70 | 19-0 | 0-80 | 27-0 |
| 2 | 0-32 | 2-4 | 0-85 | 31-0 | 0-80 | 27-0 |
| 3 | 0-37 | 3-4 | 0-90 | 35-0 | 0-80 | 27-0 |
| 4 | 0-42 | 4-6 | 0-80 | 27-0 | 0-80 | 27-0 |
| 5 | 0-47 | 6-1 | 0-80 | 27-0 | 0-80 | 27-0 |
| 6 | 0-50 | 7-0 | 0-80 | 27-0 | 0-70 | 19-0 |
| 7 | 0-50 | 7-0 | 0-80 | 27-0 | 0-80 | 27-0 |
| 8 | 0-50 | 7-0 | 0-82 | 28-6 | 0-80 | 27-0 |
| 9 | 0-50 | 7-0 | 0-95 | 39-5 | 0-80 | 27-0 |
| 10 | 0-50 | 7-0 | 1-20 | 63-0 | 0-80 | 27-0 |
| 11 | 0-50 | 7-0 | 1-40 | 83-0 | 0-80 | 27-0 |
| 12 | 0-50 | 7-0 | 1-40 | 83-0 | 0-80 | 27-0 |
| 13 | 0-52 | 8-0 | 1-40 | 83-0 | 0-80 | 27-0 |
| 14 | 0-62 | 13-4 | 1-45 | 88-0 | 0-80 | 27-0 |
| 15 | 0-62 | 13-4 | 1-50 | 93-0 | 0-70 | 19-0 |
| 16 | 0-60 | 12-0 | 1-40 | 83-0 | 0-70 | 19-0 |
| 17 | 0-60 | 12-0 | 1-32 | 75-0 | 0-60 | 12-0 |
| 18 | 0-60 | 12-0 | 1-30 | 73-0 | 0-50 | 7-0 |
| 19 | 0-60 | 12-0 | 1-15 | 58-5 | 0-50 | 7-0 |
| 20 | 0-60 | 12-0 | 1-10 | 54-0 | 0-50 | 7-0 |
| 21 | 0-50 | 7-0 | 1-00 | 44-0 | 0-50 | 7-0 |
| 22 | 0-50 | 7-0 | 1-00 | 44-0 | 0-60 | 12-0 |
| 23 | 0-55 | 7-0 | 1-00 | 44-0 | 0-60 | 12-0 |
| 24 | 0-50 | 7-0 | 1-10 | 54-0 | 0-60 | 12-0 |
| 25 | 0-50 | 7-0 | 1-00 | 44-0 | 0-55 | 9-5 |
| 26 | 0-50 | 7-0 | 1-00 | 44-0 | 0-50 | 7-0 |
| 27 | 0-50 | 7-0 | 1-00 | 44-0 | 0-50 | 7-0 |
| 28 | 0-55 | 9-5 | 0-90 | 35-0 | 0-50 | 7-0 |
| 29 | 0-60 | 12-0 | 0-80 | 27-0 | 0-50 | 7-0 |
| 30 | 0-65 | 15-5 | 0-80 | 27-0 | 0-50 | 7-0 |
| 31 | | | 0-80 | 27-0 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Barnes Creek, near Barnes Lake, for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-50 | 7-0 | 0-30 | 2-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-45 | 5-5 |
| 2 | 0-50 | 7-0 | 0-30 | 2-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-45 | 5-5 |
| 3 | 0-40 | 4-0 | 0-30 | 2-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-45 | 5-5 |
| 4 | 0-40 | 4-0 | 0-30 | 2-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-45 | 5-5 |
| 5 | 0-40 | 4-0 | 0-30 | 2-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-45 | 5-5 |
| 6 | 0-40 | 4-0 | 0-30 | 2-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-45 | 5-5 |
| 7 | 0-40 | 4-0 | 0-30 | 2-0 | 0-22 | 1-0 | 0-40 | 4-0 | 0-40 | 4-0 | 0-50 | 7-0 |
| 8 | 0-45 | 5-5 | 0-30 | 2-0 | 0-30 | 2-0 | 0-40 | 4-0 | 0-40 | 4-0 | 0-50 | 7-0 |
| 9 | 0-50 | 7-0 | 0-30 | 2-0 | 0-35 | 3-0 | 0-40 | 4-0 | 0-40 | 4-0 | | |
| 10 | 0-50 | 7-0 | 0-30 | 2-0 | 0-35 | 3-0 | 0-40 | 4-0 | 0-40 | 4-0 | | |
| 11 | 0-50 | 7-0 | 0-30 | 2-0 | 0-35 | 3-0 | 0-40 | 4-0 | 0-40 | 4-0 | | |
| 12 | 0-50 | 7-0 | 0-30 | 2-0 | 0-35 | 3-0 | 0-40 | 4-0 | 0-40 | 4-0 | | |
| 13 | 0-50 | 7-0 | 0-30 | 2-0 | 0-32 | 2-4 | 0-40 | 4-0 | 0-40 | 4-0 | | |
| 14 | 0-50 | 7-0 | 0-30 | 2-0 | 0-30 | 2-0 | 0-40 | 4-0 | 0-42 | 4-6 | | |
| 15 | 0-50 | 7-0 | 0-30 | 2-0 | 0-30 | 2-0 | 0-45 | 5-5 | 0-45 | 5-5 | | |
| 16 | 0-50 | 7-0 | 0-30 | 2-0 | 0-30 | 2-0 | 0-45 | 5-5 | 0-47 | 6-1 | | |
| 17 | 0-50 | 7-0 | 0-30 | 2-0 | 0-32 | 2-4 | 0-45 | 5-5 | 0-50 | 7-0 | | |
| 18 | 0-40 | 4-0 | 0-30 | 2-0 | 0-37 | 3-4 | 0-50 | 7-0 | 0-50 | 7-0 | | |
| 19 | 0-40 | 4-0 | 0-30 | 2-0 | 0-40 | 4-0 | 0-50 | 7-0 | 0-50 | 7-0 | | |
| 20 | 0-40 | 4-0 | 0-30 | 2-0 | 0-40 | 4-0 | 0-50 | 7-0 | 0-50 | 7-0 | | |
| 21 | 0-40 | 4-0 | 0-25 | 1-4 | 0-40 | 4-0 | 0-50 | 7-0 | 0-50 | 7-0 | | |
| 22 | 0-40 | 4-0 | 0-25 | 1-4 | 0-40 | 4-0 | 0-50 | 7-0 | 0-50 | 7-0 | | |
| 23 | 0-40 | 4-0 | 0-25 | 1-4 | 0-40 | 4-0 | 0-50 | 7-0 | 0-50 | 7-0 | | |
| 24 | 0-40 | 4-0 | 0-22 | 1-0 | 0-40 | 4-0 | 0-50 | 7-0 | 0-50 | 7-0 | | |
| 25 | 0-40 | 4-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-45 | 5-5 | 0-50 | 7-0 | | |
| 26 | 0-40 | 4-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-45 | 5-5 | 0-50 | 7-0 | | |
| 27 | 0-40 | 4-0 | 0-20 | 0-7 | 0-35 | 3-0 | 0-40 | 4-0 | 0-50 | 7-0 | | |
| 28 | 0-40 | 4-0 | 0-20 | 0-7 | 0-35 | 3-0 | 0-40 | 4-0 | 0-50 | 7-0 | | |
| 29 | 0-40 | 4-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-50 | 7-0 | | |
| 30 | 0-35 | 3-0 | 0-20 | 0-7 | 0-40 | 4-0 | 0-40 | 4-0 | 0-50 | 7-0 | | |
| 31 | 0-35 | 3-0 | 0-20 | 0-7 | | | 0-40 | 4-0 | | | | |

MONTHLY DISCHARGE of Barnes Creek, near Barnes Lake, for 1914.

(Drainage area, 38 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | Run-Off. | |
|------------|---------------------------|----------|-------------|--------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 15-5 | 2-0 | 8-3 | 0-2 | 0-2 | 402 |
| May | 93-0 | 19-0 | 49-4 | 1-3 | 1-5 | 3,038 |
| June | 27-0 | 7-0 | 17-6 | 0-5 | 0-5 | 1,048 |
| July | 7-0 | 3-0 | 5-0 | 0-1 | 0-2 | 310 |
| August | 2-0 | 0-7 | 1-6 | 0-04 | 0-05 | 98 |
| September | 4-0 | 0-7 | 2-6 | 0-1 | 0-1 | 154 |
| October | 7-0 | 4-0 | 4-9 | 0-1 | 0-2 | 301 |
| November | 7-0 | 4-0 | 5-5 | 0-1 | 0-2 | 327 |
| December | 7-0 | 5-5 | (for period | Dec. 1 to Dec. 8.) | | |
| The period | 93-0 | 0-7 | 11-8 | 0-30 | 2-95 | 5,768 |

NOTE.—Winter conditions prevail after December 8.

BONAPARTE RIVER (2003).

Location.—Section 18, township 21, range 24, west 6th meridian.

Records Available.—June 10 to November 6, 1911; March 25 to December 22, 1912; March 30 to December 31, 1913; January 1 to December 9, 1914.

Drainage Area.—Two thousand square miles.

Gauge.—Standard vertical staff gauge read daily by J. G. Collins.

Channel.—Channel straight at measuring section, average width 50 feet. Velocity high.

Discharge Measurements.—Discharge measurements are made by wading, except at high water, when cable carrier is used.

Winter Flow.—Ice conditions prevail on this stream during January and February.

Accuracy.—The accuracy of returns is considered very high, the curve being well defined, and results should fall within 5 per cent.

DISCHARGE MEASUREMENTS of Bonaparte River, near mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section | Mean Velocity. | Gauge Height. | Discharge. |
|-------------|---------------------|-----------|--------|-----------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 22..... | C. B. Corbould..... | 1673 | 54 | 160 | 6.28 | 3.23 | 1,005 ¹ |
| July 9..... | " | 1915 | 48 | 107 | 3.3 | 1.98 | 359 ² |

¹ Actual gauge height 3.30, gauge sunk 0.07 foot during the winter, thus making actual readings 0.07 too high.

² Actual gauge height 2.05.

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHTS AND DISCHARGE of Bonaparte River, near Collins Ranch, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 1-03 | 70 | 1-03 | 70 | 1-03 | 70 | 1-38 | 164-5 | 3-08 | 841 | 2-83 | 651 |
| 2. | 0-98 | 56 | 0-98 | 56 | 1-03 | 70 | 1-33 | 150-5 | 3-13 | 889 | 2-83 | 651 |
| 3. | 0-98 | 56 | 0-98 | 56 | 1-03 | 70 | 1-33 | 150-5 | 2-93 | 717-5 | 2-78 | 622 |
| 4. | 1-03 | 70 | 0-98 | 56 | 1-08 | 83 | 1-38 | 164-5 | 3-03 | 795 | 2-78 | 622 |
| 5. | 1-08 | 83 | 0-98 | 56 | 1-08 | 83 | 1-38 | 164-5 | 3-13 | 889 | 2-78 | 622 |
| 6. | 1-08 | 83 | 0-98 | 56 | 1-08 | 83 | 1-63 | 232-5 | 3-23 | 993-5 | 2-78 | 622 |
| 7. | 1-13 | 96 | 0-98 | 56 | 1-08 | 83 | 1-68 | 246-5 | 3-33 | 1,109 | 2-78 | 622 |
| 8. | 1-13 | 96 | 0-98 | 56 | 1-08 | 83 | 1-73 | 260-0 | 3-33 | 1,109 | 2-78 | 622 |
| 9. | 1-08 | 83 | 0-98 | 56 | 1-13 | 96 | 1-78 | 273-5 | 3-43 | 1,232-5 | 2-73 | 597 |
| 10. | 1-03 | 70 | 0-98 | 56 | 1-13 | 96 | 1-88 | 302 | 3-53 | 1,354 | 2-78 | 622 |
| 11. | 1-13 | 96 | 0-98 | 56 | 1-18 | 110 | 1-93 | 317 | 3-63 | 1,482-5 | 2-83 | 651 |
| 12. | 1-13 | 96 | 0-98 | 56 | 1-18 | 110 | 2-03 | 347 | 3-68 | 1,553-5 | 2-88 | 683 |
| 13. | 1-13 | 96 | 0-98 | 56 | 1-18 | 110 | 2-13 | 377 | 3-73 | 1,625 | 2-93 | 717-5 |
| 14. | 1-13 | 96 | 0-93 | 42-5 | 1-23 | 123 | 2-23 | 408 | 3-73 | 1,625 | 2-93 | 717-5 |
| 15. | 1-08 | 83 | 0-93 | 42-5 | 1-28 | 137 | 2-43 | 475-5 | 3-83 | 1,768-5 | 2-98 | 753-5 |
| 16. | 1-08 | 83 | 0-93 | 42-5 | 1-28 | 137 | 2-58 | 532 | 3-83 | 1,768-5 | 2-98 | 753-5 |
| 17. | 1-18 | 110 | 0-93 | 42-5 | 1-33 | 130-5 | 2-68 | 573-5 | 3-73 | 1,625 | 2-83 | 651-0 |
| 18. | 1-23 | 123 | 0-93 | 42-5 | 1-38 | 164-5 | 2-83 | 651 | 3-63 | 1,482-5 | 2-73 | 597 |
| 19. | 1-13 | 96 | 0-93 | 42-5 | 1-38 | 164-5 | 2-83 | 651 | 3-53 | 1,354 | 2-63 | 552-5 |
| 20. | 1-08 | 83 | 0-93 | 42-5 | 1-48 | 191-5 | 3-03 | 795 | 3-43 | 1,232-5 | 2-58 | 532 |
| 21. | 1-08 | 83 | 0-93 | 42-5 | 1-53 | 205 | 2-83 | 651 | 3-23 | 993-5 | 2-53 | 512 |
| 22. | 1-08 | 83 | 0-93 | 42-5 | 1-53 | 205 | 2-78 | 622 | 3-28 | 1,049-5 | 2-43 | 475-5 |
| 23. | 1-08 | 83 | 0-93 | 42-5 | 1-48 | 191-5 | 2-78 | 622 | 3-28 | 1,049-5 | 2-43 | 475-5 |
| 24. | 1-08 | 83 | 0-93 | 42-5 | 1-43 | 178-0 | 2-73 | 597 | 3-33 | 1,109 | 2-43 | 475-5 |
| 25. | 1-08 | 83 | 0-98 | 56-0 | 1-33 | 150-5 | 2-73 | 597 | 3-28 | 1,049-5 | 2-48 | 493 |
| 26. | 1-03 | 70 | 0-98 | 56-0 | 1-23 | 123 | 2-73 | 597 | 3-23 | 993-5 | 2-48 | 493 |
| 27. | 1-03 | 70 | 0-98 | 56-0 | 1-33 | 150-5 | 2-73 | 597 | 3-18 | 940 | 2-48 | 493 |
| 28. | 1-03 | 70 | 1-03 | 70 | 1-33 | 150-5 | 2-78 | 622 | 3-13 | 889 | 2-43 | 475-5 |
| 29. | 1-03 | 70 | | | 1-38 | 164-5 | 2-83 | 651 | 3-03 | 795 | 2-43 | 475-5 |
| 30. | 1-03 | 70 | | | 1-43 | 178 | 2-93 | 717-5 | 2-88 | 683 | 2-43 | 475-5 |
| 31. | 1-03 | 70 | | | 1-43 | 178 | | | 2-83 | 651 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE OF Bonaparte River, at Collins Ranch, for 1914.—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2-38 | 458 | 1-53 | 205 | 0-98 | 56 | 1-13 | 96 | 1-03 | 70 | 1-13 | 96 |
| 2..... | 2-33 | 440-5 | 1-48 | 191-5 | 0-98 | 56 | 1-08 | 83 | 1-03 | 70 | 1-13 | 96 |
| 3..... | 2-28 | 423-5 | 1-43 | 178 | 0-93 | 42-5 | 1-08 | 83 | 1-03 | 70 | 1-13 | 96 |
| 4..... | 2-23 | 408 | 1-38 | 164-5 | 0-93 | 42-5 | 1-08 | 83 | 1-03 | 70 | 1-13 | 96 |
| 5..... | 2-18 | 392 | 1-33 | 150-5 | 0-93 | 42-5 | 1-08 | 83 | 1-08 | 83 | 1-13 | 96 |
| 6..... | 2-13 | 377 | 1-33 | 150-5 | 0-93 | 42-5 | 1-08 | 83 | 1-08 | 83 | 1-13 | 96 |
| 7..... | 2-08 | 362 | 1-28 | 137 | 0-93 | 42-5 | 1-08 | 83 | 1-08 | 83 | 1-13 | 96 |
| 8..... | 2-03 | 347 | 1-28 | 137 | 0-98 | 56-0 | 1-08 | 83 | 1-08 | 83 | 1-23 | 103 |
| 9..... | 1-98 | 332 | 1-23 | 123 | 0-98 | 56-0 | 1-08 | 83 | 1-08 | 83 | 1-28 | 137 |
| 10..... | 1-93 | 317 | 1-23 | 123 | 0-93 | 42-5 | 1-13 | 96 | 1-03 | 70 | ..... | ..... |
| 11..... | 1-88 | 302 | 1-23 | 123 | 1-13 | 96 | 1-13 | 96 | 1-03 | 70 | ..... | ..... |
| 12..... | 1-83 | 288 | 1-23 | 123 | 1-08 | 83 | 1-13 | 96 | 1-03 | 70 | ..... | ..... |
| 13..... | 1-83 | 288 | 1-23 | 123 | 1-13 | 96 | 1-08 | 83 | 1-08 | 83 | ..... | ..... |
| 14..... | 1-78 | 273-5 | 1-18 | 110 | 1-13 | 96 | 1-08 | 83 | 1-08 | 83 | ..... | ..... |
| 15..... | 1-83 | 288 | 1-18 | 110 | 1-13 | 96 | 1-08 | 83 | 1-08 | 83 | ..... | ..... |
| 16..... | 1-78 | 273-5 | 1-18 | 110 | 1-18 | 110 | 1-03 | 70 | 1-08 | 83 | ..... | ..... |
| 17..... | 1-78 | 273-5 | 1-18 | 110 | 1-18 | 110 | 1-03 | 70 | 1-13 | 96 | ..... | ..... |
| 18..... | 1-73 | 260 | 1-18 | 110 | 1-23 | 123 | 1-03 | 70 | 1-13 | 96 | ..... | ..... |
| 19..... | 1-68 | 246-5 | 1-18 | 110 | 1-23 | 123 | 1-03 | 70 | 1-13 | 96 | ..... | ..... |
| 20..... | 1-73 | 260 | 1-13 | 96 | 1-28 | 137 | 1-03 | 70 | 1-13 | 96 | ..... | ..... |
| 21..... | 1-68 | 246-5 | 1-13 | 96 | 1-28 | 137 | 1-03 | 70 | 1-18 | 110 | ..... | ..... |
| 22..... | 1-68 | 246-5 | 1-13 | 96 | 1-23 | 123 | 1-03 | 70 | 1-18 | 110 | ..... | ..... |
| 23..... | 1-63 | 232-5 | 1-13 | 96 | 1-23 | 123 | 1-03 | 70 | 1-23 | 123 | ..... | ..... |
| 24..... | 1-63 | 232-5 | 1-08 | 83 | 1-18 | 110 | 1-03 | 70 | 1-23 | 123 | ..... | ..... |
| 25..... | 1-63 | 232-5 | 1-08 | 83 | 1-18 | 110 | 1-03 | 70 | 1-18 | 110 | ..... | ..... |
| 26..... | 1-68 | 246-5 | 1-08 | 83 | 1-13 | 96 | 1-03 | 70 | 1-18 | 110 | ..... | ..... |
| 27..... | 1-63 | 232-5 | 1-03 | 70 | 1-13 | 96 | 1-03 | 70 | 1-18 | 110 | ..... | ..... |
| 28..... | 1-63 | 232-5 | 1-03 | 70 | 1-13 | 96 | 1-03 | 70 | 1-18 | 110 | ..... | ..... |
| 29..... | 1-58 | 218-5 | 1-03 | 70 | 1-13 | 96 | 1-03 | 70 | 1-13 | 96 | ..... | ..... |
| 30..... | 1-58 | 218-5 | 0-98 | 56 | 1-13 | 96 | 1-03 | 70 | 1-13 | 96 | ..... | ..... |
| 31..... | 1-53 | 205-0 | 0-98 | 56 | ..... | ..... | 1-03 | 70 | ..... | ..... | ..... | ..... |

SESSIONAL PAPER No. 25e

MONTHLY DISCHARGE of Bonaparte River at Collins Ranch, near Ashcroft, for 1914.

(Drainage area, 2,000 square miles.)

| MONTH. | DISCHARGES IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|----------------------------|----------|--------------------|---------------------|-----------------------------------|------------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January..... | 123 | 56.0 | 82.6 | 0.04 | 0.05 | 5,079 |
| February..... | 70 | 42.5 | 51.7 | 0.03 | 0.03 | 2,871 |
| March..... | 205 | 70 | 131.9 | 0.06 | 0.07 | 8,110 |
| April..... | 795 | 150.5 | 450.3 | 0.22 | 0.25 | 26,795 |
| May..... | 1,768.5 | 651 | 1,149.9 | 0.57 | 0.66 | 70,710 |
| June..... | 753.5 | 475.5 | 590.1 | 0.29 | 0.32 | 35,113 |
| July..... | 458 | 205 | 295.3 | 0.15 | 0.17 | 18,157 |
| August..... | 205 | 56 | 114.3 | 0.06 | 0.07 | 7,028 |
| September..... | 137 | 42.5 | 87.7 | 0.04 | 0.05 | 5,218 |
| October..... | 96 | 70 | 77.9 | 0.04 | 0.05 | 4,790 |
| November..... | 123 | 70 | 90.6 | 0.04 | 0.05 | 5,391 |
| December..... | 137 | 96 | (for period) | Dec. 1 to Dec. 9.) | | |
| The year..... | 1,768.5 | 42.5 | 276 (estimated) | 0.13 (estimated) | 1.82 (estimated) | 195,000 (estimated) |

NOTE.—Winter conditions obtained after December 9.

Precipitation varies from a minimum of 5 to a maximum of 25 inches per annum. The low run-off "depth in inches on drainage area" seems to indicate high evaporation losses, and probably an over-estimate of the drainage area, which however, was taken from the best available map.

CRISS CREEK (2007).

Location.—Sec. 32, township 22, range 22, west 6th meridian.*Records Available.*—June 14 to September 14, 1912; April 22 to November 21, 1913; April 1 to December 9, 1914.*Drainage Area.*—One hundred and fifty square miles.*Gauge.*—Standard vertical staff gauge, read daily by W. J. Hoey.*Channel.*—The channel at measuring section is straight. Velocity is high. Bed of stream composed of gravel and boulders.*Winter Flow.*—Ice conditions exist on this stream during January, February, and part of March.*Accuracy.*—The accuracy of returns is considered to be very high. The curve is well rated, and results should be within 5 per cent.

DISCHARGE MEASUREMENTS of Criss Creek above Deadman River, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|----------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 24 | C. B. Corbould | 1673 | 32 | 77 | 5.34 | 2.05 | 412 |
| July 10 | C. B. Corbould | 1915 | 23 | 29.5 | 0.83 | 0.35 | 24.5 |

Actual gauge height 2.10 gauge sunk .05 feet during winter, thus making actual reading .05 too high.

Actual gauge height 0.4.

See measurements 1913, Water Resources Paper No. 8.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Criss Creek near Hoy's Ranch,
for 1914.

| DAY. | APRIL. | | MAY. | | JUNE. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 0.25 | 18.3 | 1.45 | 165.8 | 1.25 | 117.0 |
| 2..... | 0.25 | 18.3 | 1.75 | 265.0 | 1.25 | 117.0 |
| 3..... | 0.25 | 18.3 | 1.95 | 360.8 | 1.30 | 127.5 |
| 4..... | 0.55 | 29.0 | 2.15 | 471.5 | 1.30 | 127.5 |
| 5..... | 0.65 | 34.8 | 2.25 | 532.5 | 1.25 | 117.0 |
| 6..... | 0.95 | 64.2 | 2.15 | 471.5 | 1.25 | 117.0 |
| 7..... | 1.00 | 71.0 | 2.10 | 443.0 | 1.35 | 140.0 |
| 8..... | 1.05 | 79.2 | 1.95 | 360.8 | 1.45 | 165.8 |
| 9..... | 1.10 | 87.5 | 1.95 | 360.8 | 1.55 | 194.0 |
| 10..... | 1.10 | 87.5 | 1.95 | 360.8 | 1.75 | 265.0 |
| 11..... | 1.15 | 97.0 | 1.85 | 309.5 | 1.85 | 309.5 |
| 12..... | 1.25 | 117.0 | 1.75 | 265.0 | 1.85 | 309.5 |
| 13..... | 1.25 | 117.0 | 1.75 | 265.0 | 1.75 | 265.0 |
| 14..... | 1.25 | 117.0 | 1.85 | 309.5 | 1.65 | 227.0 |
| 15..... | 1.25 | 117.0 | 1.95 | 360.8 | 1.55 | 194.0 |
| 16..... | 1.35 | 140.0 | 2.25 | 532.5 | 1.50 | 179.0 |
| 17..... | 1.35 | 140.0 | 2.15 | 471.5 | 1.45 | 165.8 |
| 18..... | 1.35 | 140.0 | 2.05 | 415.2 | 1.35 | 140.0 |
| 19..... | 1.45 | 165.8 | 1.95 | 360.8 | 1.25 | 117.0 |
| 20..... | 1.45 | 165.8 | 1.95 | 360.8 | 1.25 | 117.0 |
| 21..... | 1.45 | 165.8 | 1.85 | 309.5 | 1.25 | 117.0 |
| 22..... | 1.35 | 140.0 | 1.85 | 309.5 | 1.25 | 117.0 |
| 23..... | 1.25 | 117.0 | 1.95 | 360.8 | 1.15 | 97.0 |
| 24..... | 1.25 | 117.0 | 1.85 | 309.5 | 1.15 | 97.0 |
| 25..... | 1.25 | 117.0 | 1.75 | 265.0 | 1.05 | 79.2 |
| 26..... | 1.25 | 117.0 | 1.65 | 227.0 | 1.05 | 79.2 |
| 27..... | 1.25 | 117.0 | 1.65 | 227.0 | 0.95 | 64.2 |
| 28..... | 1.25 | 117.0 | 1.60 | 209.0 | 0.95 | 64.2 |
| 29..... | 1.25 | 117.0 | 1.55 | 194.0 | 0.95 | 64.2 |
| 30..... | 1.25 | 117.0 | 1.45 | 165.8 | 0.95 | 64.2 |
| 31..... | | | 1.35 | 140.0 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Criss Creek near Hoey's Ranch, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-----------|---------------|------------|---------------|-----------|---------------|------------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge. | Gauge Height. | Discharge | Gauge Height. | Discharge. | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-90 | 57-5 | 0-05 | 13-0 | -0-25 | 6-5 | 0-10 | 14-0 | 0-15 | 15-5 | 0-15 | 15-5 |
| 2 | 0-85 | 52-2 | 0-00 | 12-0 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 |
| 3 | 0-75 | 42-5 | 0-00 | 12-0 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 |
| 4 | 0-75 | 42-5 | 0-00 | 12-0 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 |
| 5 | 0-65 | 34-8 | 0-00 | 12-0 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 |
| 6 | 0-65 | 34-8 | 0-60 | 12-0 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 |
| 7 | 0-60 | 31-5 | 0-00 | 12-0 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 |
| 8 | 0-60 | 31-5 | 0-00 | 12-0 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 |
| 9 | 0-45 | 24-5 | 0-00 | 12-0 | -0-35 | 4-5 | 0-15 | 15-5 | 0-15 | 15-5 | 0-25 | 18-3 |
| 10 | 0-35 | 21-0 | -0-05 | 10-8 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 11 | 0-35 | 21-0 | -0-05 | 10-8 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 12 | 0-25 | 18-3 | -0-05 | 10-8 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 13 | 0-25 | 18-3 | -0-05 | 10-8 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 14 | 0-45 | 24-5 | -0-05 | 10-8 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 15 | 0-55 | 29-0 | -0-05 | 10-8 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 16 | 0-65 | 34-8 | -0-05 | 10-8 | -0-25 | 6-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 17 | 0-75 | 42-5 | -0-10 | 9-5 | -0-15 | 8-5 | 0-20 | 17-0 | 0-15 | 15-5 | | |
| 18 | 0-75 | 42-5 | -0-10 | 9-5 | -0-05 | 10-8 | 0-20 | 17-0 | 0-15 | 15-5 | | |
| 19 | 0-55 | 29-0 | -0-10 | 9-5 | -0-05 | 10-8 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 20 | 0-45 | 24-5 | -0-10 | 9-5 | 0-00 | 12-0 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 21 | 0-35 | 21-0 | -0-15 | 8-5 | 0-05 | 13-0 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 22 | 0-25 | 18-3 | -0-05 | 10-8 | 0-05 | 13-0 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 23 | 0-15 | 15-5 | -0-05 | 10-8 | 0-15 | 15-5 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 24 | 0-15 | 15-5 | -0-15 | 8-5 | 0-25 | 18-3 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 25 | 0-15 | 15-5 | -0-20 | 7-5 | 0-25 | 18-3 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 26 | 0-10 | 14-0 | -0-25 | 6-5 | 0-25 | 18-3 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 27 | 0-10 | 14-0 | -0-25 | 6-5 | 0-25 | 18-3 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 28 | 0-10 | 14-0 | -0-25 | 6-5 | 0-35 | 21-0 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 29 | 0-10 | 14-0 | -0-2 | 6-5 | 0-35 | 21-0 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 30 | 0-05 | 13-0 | -0-25 | 6-5 | 0-35 | 21-0 | 0-15 | 15-5 | 0-15 | 15-5 | | |
| 31 | 0-05 | 13-0 | -0-25 | 6-5 | | | 0-15 | 15-5 | | | | |

MONTHLY DISCHARGE of Criss Creek near Hoey's Ranch, for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------------------------------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 165-8 | 18-3 | 102-2 | 0-7 | 0-8 | 6,081 |
| May | 532-5 | 140 | 327-7 | 2-2 | 2-5 | 20,149 |
| June | 309-5 | 64-2 | 145 | 0-90 | 1-07 | 8,628 |
| July | 57-5 | 13-0 | 26-0 | 0-18 | 0-20 | 1,636 |
| August | 13-0 | 6-5 | 9-9 | 0-07 | 0-08 | 609 |
| September | 21-0 | 4-5 | 10-7 | 0-07 | 0-08 | 618 |
| October | 17-0 | 14-0 | 15-5 | 0-1 | 0-1 | 953 |
| November | 15-5 | 15-5 | 15-5 | 0-1 | 0-1 | 922 |
| December | 18-3 | 15-5 | (for period Dec. 1 to Dec. 9) | | | |
| The period | 532-5 | 4-5 | 81-6 | 0-55 | 4-03 | 39,616 |

NOTE.—Winter conditions prevailed after December 9. No precipitation records are available for the Criss Creek valley. From the general situation and contour of the drainage basin it is thought that climatic conditions are similar to those of Kamloops, where the mean annual precipitation is 10-3 inches.

Officials of the Dominion Forestry Branch state that Criss creek actually flows from Sitkwhun kun mountain, at a point where government maps show Tranquillo river flowing. If this is verified by later surveys the drainage area of Criss creek shown above (150 square miles) will be much smaller than the actual drainage area of the stream.

COLDWATER RIVER (2006).

Location.—At Merritt, Water District No. 3.

Records Available.—April 17 to August 31, 1913; April 1 to December 6, 1914.

Drainage Area.—Three hundred and sixty square miles.

Gauge.—It is a vertical staff gauge, and is read daily by J. Skimming.

Channel.—The stream is from 50 to 75 feet wide; velocities are medium. Bed of stream is rocky and permanent.

Discharge Measurements.—Are made by wading during low water, and from traffic bridge at high water.

Winter Flow.—Ice conditions exist on this river during January and February.

Accuracy.—Measurements on July 29 appears to indicate that channel shifted during summer of 1914. Results are therefore subject to inaccuracy.

DISCHARGE MEASUREMENTS of Coldwater River at Merritt, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|----------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq.-ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Mar. 12..... | E. M. Dann & K. G. Chisholm..... | 1505 | 47 | 73.4 | 1.11 | 1.62 | 81.3 |
| May 2..... | do do .. | 1505 | 68 | 244.0 | 5.86 | 3.27 | 1,459.0 |
| July 8..... | do do .. | 1505 | 62 | 151.0 | 2.78 | 1.69 | 420.0 |
| July 29..... | C. B. Corbould..... | 1915 | 56 | 90.6 | 0.96 | 0.85 | 87.5 |

For further metering, see Water Resources Paper No. 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Coldwater near Merritt, for 1914.

| Day. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-25 | 2 | 2-60 | 985 | 3-10 | 1,340 |
| 2 | 0-27 | 3 | 3-15 | 1,375 | 3-7 | 1,775 |
| 3 | 0-30 | 4 | 3-80 | 1,845 | 3-70 | 1,775 |
| 4 | 0-42 | 9 | 3-45 | 1,592 | 3-00 | 1,265 |
| 5 | 1-57 | 345 | 3-05 | 1,302 | 2-55 | 952 |
| 6 | 1-87 | 510 | 2-82 | 1,125 | 2-30 | 790 |
| 7 | 2-00 | 600 | 2-70 | 1,055 | 2-15 | 692 |
| 8 | 2-13 | 692 | 2-72 | 1,055 | 2-07 | 630 |
| 9 | 2-27 | 757 | 3-07 | 1,302 | 2-10 | 660 |
| 10 | 2-40 | 855 | 3-57 | 1,665 | 2-10 | 660 |
| 11 | 2-47 | 887 | 3-50 | 1,630 | 2-25 | 757 |
| 12 | 2-60 | 985 | 3-55 | 1,665 | 2-40 | 835 |
| 13 | 2-67 | 1,020 | 3-70 | 1,775 | 2-70 | 1,035 |
| 14 | 2-90 | 1,195 | 4-10 | 2,065 | 2-60 | 1,195 |
| 15 | 3-00 | 1,265 | 4-40 | 2,285 | 3-05 | 1,302 |
| 16 | 3-05 | 1,302 | 4-10 | 2,065 | 3-30 | 1,480 |
| 17 | 2-75 | 1,090 | 3-60 | 1,700 | 3-30 | 1,480 |
| 18 | 2-55 | 952 | 3-50 | 1,630 | 3-00 | 1,265 |
| 19 | 2-55 | 952 | 3-25 | 1,445 | 2-70 | 1,055 |
| 20 | 2-67 | 1,020 | 3-25 | 1,445 | 2-45 | 887 |
| 21 | 2-57 | 952 | 3-35 | 1,517 | 2-15 | 692 |
| 22 | 2-47 | 887 | 3-45 | 1,592 | 2-00 | 600 |
| 23 | 2-40 | 855 | 3-70 | 1,775 | 1-80 | 480 |
| 24 | 2-32 | 790 | 3-85 | 1,880 | 1-92 | 540 |
| 25 | 2-27 | 757 | 3-50 | 1,630 | 2-20 | 725 |
| 26 | 2-25 | 757 | 3-05 | 1,302 | 2-10 | 660 |
| 27 | 2-25 | 757 | 2-75 | 1,090 | 2-12 | 660 |
| 28 | 2-20 | 725 | 2-55 | 952 | 2-02 | 600 |
| 29 | 2-15 | 692 | 2-35 | 822 | 2-15 | 692 |
| 30 | 2-27 | 757 | 2-35 | 822 | 2-30 | 790 |
| 31 | | | 2-60 | 985 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Coldwater River near Merritt, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-20 | 725 | 0-75 | 46 | 0-45 | 12 | 0-67 | 31 | 3-00 | 1,265 | 1-35 | 247 |
| 2 | 2-30 | 793 | 0-75 | 46 | 0-45 | 12 | 0-65 | 31 | 1-80 | 480 | 1-25 | 202 |
| 3 | 2-27 | 757 | 0-70 | 38 | 0-45 | 12 | 0-65 | 31 | 1-50 | 320 | 1-25 | 202 |
| 4 | 2-20 | 725 | 0-70 | 38 | 0-49 | 9 | 0-65 | 31 | 1-50 | 320 | 1-15 | 159 |
| 5 | 1-9 | 540 | 0-70 | 38 | 0-49 | 9 | 0-65 | 31 | 1-60 | 370 | 1-15 | 159 |
| 6 | 1-80 | 480 | 0-70 | 38 | 0-40 | 9 | 0-65 | 31 | 1-45 | 295 | 1-10 | 138 |
| 7 | 1-65 | 397 | 0-70 | 38 | 0-40 | 9 | 0-65 | 31 | 1-25 | 202 | | |
| 8 | 1-62 | 370 | 0-70 | 38 | 0-40 | 9 | 0-60 | 25 | 1-20 | 180 | | |
| 9 | 1-60 | 370 | 0-70 | 38 | 0-40 | 9 | 0-60 | 25 | 1-45 | 295 | | |
| 10 | 1-62 | 370 | 0-65 | 31 | 0-42 | 9 | 0-60 | 25 | 1-45 | 295 | | |
| 11 | 1-60 | 370 | 0-65 | 31 | 0-45 | 12 | 0-63 | 25 | 1-35 | 247 | | |
| 12 | 1-50 | 323 | 0-65 | 31 | 0-50 | 15 | 0-70 | 38 | 1-40 | 270 | | |
| 13 | 1-45 | 293 | 0-60 | 25 | 0-50 | 15 | 0-70 | 38 | 1-30 | 225 | | |
| 14 | 1-45 | 293 | 0-63 | 23 | 0-55 | 21 | 0-70 | 38 | 1-30 | 225 | | |
| 15 | 1-40 | 270 | 0-63 | 23 | 0-60 | 25 | 0-70 | 38 | 1-30 | 225 | | |
| 16 | 1-32 | 225 | 0-63 | 25 | 0-60 | 25 | 0-65 | 31 | 1-10 | 138 | | |
| 17 | 1-30 | 225 | 0-55 | 23 | 0-63 | 31 | 0-65 | 31 | | | | |
| 18 | 1-30 | 225 | 0-55 | 23 | 0-70 | 38 | 0-10 | 0 | | | | |
| 19 | 1-20 | 180 | 0-55 | 23 | 0-70 | 38 | 0-15 | 0 | | | | |
| 20 | 1-23 | 180 | 0-55 | 23 | 1-10 | 138 | 1-10 | 138 | | | | |
| 21 | 1-10 | 138 | 0-50 | 15 | 1-60 | 102 | 0-15 | 0 | | | | |
| 22 | 1-00 | 102 | 0-50 | 15 | 0-93 | 77 | 0-93 | 89 | | | | |
| 23 | 1-00 | 102 | 0-50 | 15 | 0-85 | 66 | 0-85 | 66 | | | | |
| 24 | 1-00 | 102 | 0-50 | 15 | 0-83 | 55 | 0-85 | 66 | | | | |
| 25 | 1-00 | 102 | 0-50 | 15 | 0-80 | 55 | 0-83 | 66 | 1-43 | 270 | | |
| 26 | 1-00 | 102 | 0-50 | 15 | 0-75 | 46 | 0-97 | 77 | 1-70 | 425 | | |
| 27 | 0-93 | 77 | 0-47 | 12 | 0-70 | 38 | 0-85 | 66 | 1-60 | 370 | | |
| 28 | 0-97 | 77 | 0-43 | 12 | 0-67 | 31 | 0-85 | 66 | 1-60 | 370 | | |
| 29 | 0-80 | 55 | 0-45 | 12 | 0-70 | 38 | 0-80 | 55 | 1-40 | 270 | | |
| 30 | 0-80 | 55 | 0-45 | 12 | 0-70 | 38 | 0-80 | 55 | 1-35 | 247 | | |
| 31 | 0-80 | 55 | 0-45 | 12 | | | 1-60 | 102 | | | | |

MONTHLY DISCHARGE of Coldwater River at Merritt, for 1914.

(Drainage area, 260 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|--------------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on drainage area. | Total in acre-feet. |
| April | 1,302 | 2 | 745.8 | 2.1 | 2.3 | 44,378 |
| May | 2,285 | 822 | 1,463.6 | 4.1 | 4.7 | 119,993 |
| June | 1,775 | 480 | 943.6 | 2.6 | 2.9 | 56,148 |
| July | 791 | 55 | 292.8 | 0.8 | 0.9 | 18,003 |
| August | 46 | 12 | 25.2 | 0.07 | 0.08 | 1,549 |
| September | 138 | 9 | 33.4 | 0.1 | 0.1 | 1,987 |
| October | 128 | 0 | 44.4 | 0.1 | 0.1 | 2,730 |
| November | 1,565 | 138 | 332.0 | 0.9 | 1.0 | 19,755 |
| December | 247 | 138 | | | | |
| The period.. | 2,285 | 0 | 485.1 | 1.34 | 12.08 | 234,543 |

NOTE.—Winter conditions prevailed after December 6.

No records of precipitation are available for the drainage basin of the Coldwater river. The precipitation at Nicola lake (similar climate to Merritt) is 10.66 inches (mean annual). It must be noted, however, that the Coldwater river rises in the same hills from which the Coquihalla is fed, and the precipitation in the hills is many times that in the lower reaches of the Coldwater.

SESSIONAL PAPER No. 25e

DEADMAN RIVER (2008).

Location.—Section 15, township 22, Range 22, west 6th meridian.

Records Available.—April 22 to November 21, 1913; April 1 to December 9, 1914.

Drainage Area.—300 square miles.

Gauge.—Standard staff gauge read daily by J. Hoey.

Channel.—Channel is straight and control is good. Velocity is high only at high water.

Discharge Measurements.—Curve is well defined with ten measurements at varying stages.

Winter Flow.—Ice conditions exist on this river during January, February, and March.

Accuracy.—Accuracy is considered very high, and results should fall within five per cent.

DISCHARGE MEASUREMENTS of Deadman River near Savona, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------------|--------------------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 24 | C. B. Corbould | 1,673 | 32.0 | 83.0 | 3.36 | 3.4 | 278.0 ¹ |
| July 10 | " | 1,915 | 24.0 | 29.8 | 1.45 | 1.6 | 43.5 |

¹Measurements from bridge, high-water section.
See measurements, 1913, Water Resources Paper No. 8.

DAILY GAUGE HEIGHT AND DISCHARGE OF DEADMAN RIVER ABOVE CRISS CREEK,
for 1914.

| Day. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-20 | 23-0 | 3-40 | 245-0 | 2-60 | 122-5 |
| 2 | 1-30 | 27-5 | 3-50 | 267-5 | 2-60 | 122-5 |
| 3 | 1-30 | 27-5 | 3-70 | 321-5 | 2-50 | 110-5 |
| 4 | 1-30 | 27-5 | 3-90 | 389-0 | 2-40 | 100-0 |
| 5 | 1-30 | 27-5 | 4-10 | 472-5 | 2-40 | 100-0 |
| 6 | 1-30 | 27-5 | 4-30 | 562-5 | 2-40 | 100-0 |
| 7 | 1-40 | 32-5 | 4-30 | 562-5 | 2-50 | 110-5 |
| 8 | 1-40 | 32-5 | 4-30 | 562-5 | 2-40 | 100-0 |
| 9 | 1-60 | 42-5 | 4-20 | 517-5 | 2-40 | 100-0 |
| 10 | 1-80 | 53-5 | 4-10 | 472-5 | 2-40 | 100-0 |
| 11 | 1-90 | 59-5 | 4-10 | 472-5 | 2-40 | 100-0 |
| 12 | 2-20 | 81-0 | 4-10 | 472-5 | 2-40 | 100-0 |
| 13 | 2-50 | 110-5 | 4-10 | 472-5 | 2-40 | 100-0 |
| 14 | 2-70 | 135-0 | 4-20 | 517-5 | 2-40 | 100-0 |
| 15 | 3-10 | 191-0 | 4-30 | 562-5 | 2-45 | 105-2 |
| 16 | 3-30 | 225-0 | 4-20 | 517-5 | 2-50 | 110-5 |
| 17 | 3-40 | 245-0 | 4-15 | 495-0 | 2-50 | 110-5 |
| 18 | 3-50 | 267-5 | 4-10 | 472-5 | 2-50 | 110-5 |
| 19 | 3-50 | 267-5 | 3-90 | 389-0 | 2-40 | 100-0 |
| 20 | 3-50 | 267-5 | 3-80 | 353-0 | 2-40 | 100-0 |
| 21 | 3-40 | 245-0 | 3-70 | 321-5 | 2-30 | 89-5 |
| 22 | 3-40 | 245-0 | 3-50 | 267-5 | 2-30 | 89-5 |
| 23 | 3-40 | 245-0 | 3-40 | 245-0 | 2-20 | 81-0 |
| 24 | 3-40 | 245-0 | 3-30 | 225-0 | 2-10 | 73-0 |
| 25 | 3-40 | 245-0 | 3-20 | 207-5 | 2-10 | 73-0 |
| 26 | 3-40 | 245-0 | 3-00 | 176-0 | 2-10 | 73-0 |
| 27 | 3-40 | 245-0 | 3-00 | 176-0 | 2-10 | 73-0 |
| 28 | 3-40 | 245-0 | 2-90 | 161-5 | 2-20 | 81-0 |
| 29 | 3-40 | 245-0 | 2-80 | 147-5 | 2-20 | 81-0 |
| 30 | 3-40 | 245-0 | 2-70 | 135-0 | 2-20 | 81-0 |
| 31 | ... | ... | 2-70 | 135-0 | ... | ... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Deadman River above Criss Creek, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-20 | 81-0 | 2-00 | 66-0 | 1-50 | 37-5 | 0-95 | 11-0 | 0-90 | 9-0 | 0-90 | 9-0 |
| 2 | 2-10 | 73-0 | 1-90 | 59-5 | 1-50 | 37-5 | 0-90 | 9-0 | 0-90 | 9-0 | 0-90 | 9-0 |
| 3 | 2-00 | 66-0 | 1-80 | 53-5 | 1-50 | 37-5 | 0-90 | 9-0 | 0-90 | 9-0 | 0-90 | 9-0 |
| 4 | 2-00 | 66-0 | 1-60 | 42-5 | 1-45 | 35-0 | 0-90 | 9-0 | 1-00 | 13-0 | 0-90 | 9-0 |
| 5 | 1-90 | 59-5 | 1-60 | 42-5 | 1-45 | 35-0 | 0-90 | 9-0 | 1-00 | 13-0 | 0-90 | 9-0 |
| 6 | 1-90 | 59-5 | 1-80 | 53-5 | 1-40 | 32-5 | 0-90 | 9-0 | 1-00 | 13-0 | 0-90 | 9-0 |
| 7 | 1-80 | 53-5 | 1-80 | 53-5 | 1-40 | 32-5 | 0-90 | 9-0 | 1-00 | 13-0 | 0-90 | 9-0 |
| 8 | 1-70 | 48-0 | 1-90 | 59-5 | 1-40 | 32-5 | 0-90 | 9-0 | 1-00 | 13-0 | 0-90 | 9-0 |
| 9 | 1-70 | 48-0 | 2-00 | 66-0 | 1-30 | 27-5 | 0-90 | 9-0 | 1-00 | 13-0 | 0-90 | 9-0 |
| 10 | 1-60 | 42-5 | 2-00 | 66-0 | 1-30 | 27-5 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 11 | 1-60 | 42-5 | 2-00 | 66-0 | 1-30 | 27-5 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 12 | 1-50 | 37-5 | 2-00 | 66-0 | 1-30 | 27-5 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 13 | 1-50 | 37-5 | 2-00 | 66-0 | 1-30 | 27-5 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 14 | 1-50 | 37-5 | 1-90 | 59-5 | 1-30 | 27-5 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 15 | 1-70 | 48-0 | 1-90 | 59-5 | 1-30 | 27-5 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 16 | 1-70 | 48-0 | 1-90 | 59-5 | 1-25 | 25-2 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 17 | 1-70 | 48-0 | 1-80 | 53-5 | 1-25 | 25-2 | 0-90 | 9-0 | 1-00 | 13-0 | | |
| 18 | 1-80 | 53-5 | 1-80 | 53-5 | 1-20 | 23-0 | 0-90 | 9-0 | 0-95 | 11-0 | | |
| 19 | 1-80 | 53-5 | 1-80 | 53-5 | 1-20 | 23-0 | 0-90 | 9-0 | 0-95 | 11-0 | | |
| 20 | 1-90 | 59-5 | 1-80 | 53-5 | 1-20 | 23-0 | 0-90 | 9-0 | 0-95 | 11-0 | | |
| 21 | 2-00 | 66-0 | 1-80 | 53-5 | 1-20 | 23-0 | 0-90 | 9-0 | 0-95 | 11-0 | | |
| 22 | 2-00 | 66-0 | 1-80 | 53-5 | 1-20 | 23-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 23 | 1-90 | 59-5 | 1-70 | 48-0 | 1-20 | 23-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 24 | 1-80 | 53-5 | 1-70 | 48-0 | 1-10 | 18-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 25 | 1-80 | 53-5 | 1-70 | 48-0 | 1-10 | 18-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 26 | 1-80 | 53-5 | 1-70 | 48-0 | 1-00 | 13-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 27 | 1-80 | 53-5 | 1-70 | 48-0 | 1-00 | 13-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 28 | 1-80 | 53-5 | 1-65 | 45-2 | 0-95 | 11-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 29 | 1-80 | 53-5 | 1-60 | 42-5 | 0-95 | 11-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 30 | 1-80 | 53-5 | 1-60 | 42-5 | 0-95 | 11-0 | 0-90 | 9-0 | 0-90 | 9-0 | | |
| 31 | 1-80 | 53-5 | 1-60 | 42-5 | | | 0-90 | 9-0 | | | | |

MONTHLY DISCHARGE of Deadman River above Criss Creek, for 1914.

(Drainage area, 300 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | Run-Orr. | |
|------------|---------------------------|----------|-----------------------------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 267-5 | 23-0 | 154-0 | 0-51 | 0-57 | 9,164 |
| May | 562-5 | 135-0 | 361-0 | 1-20 | 1-40 | 22,381 |
| June | 122-5 | 73-0 | 96-0 | 0-32 | 0-36 | 5,748 |
| July | 81-0 | 37-5 | 54-3 | 0-18 | 0-21 | 3,530 |
| August | 66-0 | 42-5 | 54-0 | 0-18 | 0-21 | 3,320 |
| September | 37-5 | 11-0 | 25-0 | 0-08 | 0-09 | 1,488 |
| October | 11-0 | 9-0 | 9-1 | 0-03 | 0-03 | 559 |
| November | 13-0 | 9-0 | 11-1 | 0-04 | 0-05 | 660 |
| December | 9-0 | 9-0 | (For period Dec 1 to 1) 9-1 | | | |
| The period | 562-5 | 9-0 | 96-0 | 0-32 | 2-92 | 46,659 |

Note.—Winter conditions prevailed after December 9.

FRASER RIVER AT LYTTON (2012).

Location.—Section 1, township 15, range 27, west 6th meridian.

Records Available.—February 20 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Sixty-three thousand square miles.

Gauge.—Gauge painted on rock, and read daily by J. Clark.

Channel.—The channel varies in width from 200 feet at low water to 800 feet at high water. The flow is uniform, but velocities are very high during high water.

Discharge Measurements.—The curve is well defined, from 11,562 second feet to 162,000 second feet; above this the curve has been projected.

Winter Flow.—Open flow throughout the year.

Accuracy.—Conditions for gauge readings are good. Meterings are taken from ferry boat, but should be very accurate except at extreme high water. The results are considered to fall within 10 per cent of true accuracy.

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Lytton, for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 10-0 | 13,000 | 11-0 | 16,500 | 11-0 | 16,500 | 10-0 | 13,000 | ..... | ..... | 28-3 | 119,800 |
| 2. | 10-5 | 14,750 | 10-5 | 14,750 | 11-0 | 16,500 | 10-0 | 13,000 | ..... | ..... | 27-9 | 117,375 |
| 3. | 11-5 | 18,500 | 10-0 | 13,000 | 11-0 | 16,500 | 10-0 | 13,000 | ..... | ..... | 27-7 | 116,125 |
| 4. | 12-0 | 20,500 | 9-5 | 11,250 | 11-0 | 16,500 | 10-5 | 14,750 | ..... | ..... | 28-65 | 121,900 |
| 5. | 12-5 | 23,000 | 9-0 | 9,500 | 10-5 | 14,750 | ..... | ..... | 10-5 | 14,750 | 29-9 | 129,400 |
| 6. | 12-0 | 20,500 | 9-0 | 9,500 | 10-5 | 14,750 | ..... | ..... | 11-0 | 16,500 | 31-0 | 136,250 |
| 7. | 12-0 | 20,500 | 9-5 | 11,250 | 10-5 | 14,750 | ..... | ..... | 11-0 | 16,500 | 32-0 | 142,500 |
| 8. | 12-0 | 20,500 | 11-0 | 16,500 | 10-0 | 13,000 | ..... | ..... | 10-5 | 14,750 | 32-1 | 143,100 |
| 9. | 12-0 | 20,500 | 11-5 | 18,500 | 11-0 | 16,500 | ..... | ..... | 10-0 | 13,000 | 31-4 | 138,750 |
| 10. | 11-0 | 16,500 | 11-5 | 18,500 | 10-0 | 13,000 | ..... | ..... | 11-0 | 16,500 | 31-5 | 139,375 |
| 11. | 10-5 | 14,750 | 12-0 | 20,500 | 10-0 | 13,000 | ..... | ..... | 12-0 | 20,500 | 31-7 | 140,625 |
| 12. | 11-5 | 18,500 | 12-0 | 20,500 | 10-0 | 13,000 | ..... | ..... | 12-5 | 23,000 | 31-5 | 139,375 |
| 13. | 11-5 | 18,500 | 13-0 | 25,500 | 10-0 | 13,000 | ..... | ..... | 13-0 | 25,500 | 31-6 | 140,000 |
| 14. | 11-0 | 16,500 | 13-0 | 25,500 | 10-5 | 14,750 | ..... | ..... | 13-5 | 28,500 | 31-8 | 141,250 |
| 15. | 10-0 | 13,000 | 14-0 | 31,500 | 11-5 | 18,500 | ..... | ..... | 15-0 | 37,500 | 32-6 | 146,100 |
| 16. | 10-0 | 13,000 | 14-0 | 31,500 | 11-0 | 16,500 | ..... | ..... | 16-5 | 47,000 | 34-5 | 157,625 |
| 17. | 9-5 | 11,250 | 13-5 | 28,500 | 11-0 | 16,500 | ..... | ..... | 19-0 | 62,500 | 36-1 | 167,600 |
| 18. | 10-0 | 13,000 | 13-0 | 25,500 | 12-0 | 20,500 | ..... | ..... | ..... | ..... | 37-7 | 177,200 |
| 19. | 10-0 | 13,000 | 12-0 | 20,500 | 12-0 | 20,500 | ..... | ..... | ..... | ..... | 39-2 | 186,200 |
| 20. | 10-0 | 13,000 | 12-0 | 20,500 | 12-5 | 23,000 | ..... | ..... | ..... | ..... | 39-8 | 189,800 |
| 21. | 9-5 | 11,250 | 12-0 | 20,500 | 13-0 | 25,500 | ..... | ..... | 28-2 | 119,200 | 39-9 | 190,400 |
| 22. | 9-5 | 11,250 | 11-5 | 18,500 | 13-5 | 28,500 | ..... | ..... | 28-5 | 121,000 | 37-6 | 176,600 |
| 23. | 10-0 | 13,000 | 11-0 | 16,500 | 13-0 | 25,500 | ..... | ..... | 28-6 | 121,600 | 35-3 | 162,625 |
| 24. | 9-0 | 9,500 | 11-0 | 16,500 | 13-0 | 25,500 | ..... | ..... | 29-0 | 124,000 | 34-2 | 155,750 |
| 25. | 9-0 | 9,500 | 11-0 | 16,500 | 13-0 | 25,500 | ..... | ..... | 29-2 | 125,200 | 33-8 | 153,300 |
| 26. | 9-0 | 9,500 | 11-5 | 18,500 | 12-0 | 20,500 | ..... | ..... | 31-0 | 136,250 | 32-8 | 147,300 |
| 27. | 9-0 | 9,500 | 12-0 | 20,500 | 12-0 | 20,500 | ..... | ..... | 31-3 | 138,125 | 32-3 | 144,300 |
| 28. | 9-5 | 11,250 | 11-0 | 16,500 | 11-0 | 16,500 | ..... | ..... | 32-5 | 145,500 | 31-3 | 138,125 |
| 29. | 10-0 | 13,000 | ..... | ..... | 11-0 | 16,500 | ..... | ..... | 31-5 | 139,375 | 31-2 | 137,500 |
| 30. | 10-0 | 13,000 | ..... | ..... | 11-0 | 16,500 | ..... | ..... | 30-3 | 131,875 | 32-3 | 144,300 |
| 31. | 11-0 | 16,500 | ..... | ..... | 11-0 | 16,500 | ..... | ..... | 29-6 | 127,600 | ..... | ..... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Fraser River at Lytton, for 1914.

| Day. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 33.6 | 152,100 | 27.2 | 113,000 | 19.8 | 67,300 | 17.5 | 153,000 | 14.5 | 34,500 | 14.6 | 35,100 |
| 2 | 33.9 | 153,900 | 26.4 | 108,000 | 19.4 | 64,900 | 17.4 | 152,400 | 14.1 | 32,100 | 14.6 | 35,100 |
| 3 | 34.5 | 157,625 | 25.8 | 104,250 | 19.2 | 63,700 | 17.5 | 53,000 | 13.6 | 29,100 | 14.1 | 32,100 |
| 4 | 35.0 | 160,750 | 25.5 | 102,375 | 19.1 | 63,100 | 17.0 | 50,000 | 14.2 | 32,700 | 13.6 | 29,100 |
| 5 | 35.5 | 163,875 | 25.3 | 101,125 | 18.5 | 59,250 | 16.5 | 47,000 | 14.3 | 33,300 | 13.0 | 25,500 |
| 6 | 35.8 | 165,750 | 25.3 | 101,125 | 18.4 | 58,600 | 16.2 | 45,200 | 14.2 | 32,700 | 13.0 | 25,500 |
| 7 | 35.0 | 160,750 | 25.4 | 101,750 | 18.3 | 57,950 | 15.2 | 38,800 | 14.5 | 34,500 | 12.9 | 25,000 |
| 8 | 34.8 | 159,500 | 25.2 | 100,500 | 18.3 | 57,950 | 14.7 | 35,700 | 14.8 | 36,300 | 12.5 | 23,000 |
| 9 | 33.5 | 151,500 | 25.1 | 99,875 | 18.1 | 56,650 | 14.5 | 34,500 | 14.3 | 33,300 | 12.0 | 20,500 |
| 10 | 32.8 | 147,300 | 24.6 | 96,750 | 18.1 | 56,650 | 14.5 | 34,500 | 13.5 | 28,500 | 12.0 | 20,500 |
| 11 | 32.4 | 144,900 | 24.2 | 94,250 | 18.6 | 59,900 | 14.5 | 34,500 | 13.0 | 25.500 | 11.7 | 19,300 |
| 12 | 32.3 | 144,300 | 24.2 | 94,250 | 18.5 | 59,250 | 14.2 | 32,700 | 13.1 | 26,100 | 11.1 | 16,900 |
| 13 | 32.5 | 145,500 | 24.1 | 93,625 | 18.4 | 58,600 | 14.5 | 34,500 | 13.4 | 27,900 | 11.2 | 17,300 |
| 14 | 32.6 | 146,100 | 23.6 | 90,500 | 18.2 | 57,300 | 14.9 | 36,900 | 13.4 | 27,900 | 11.0 | 16,500 |
| 15 | 32.8 | 147,300 | 23.1 | 87,375 | 18.3 | 57,950 | 15.6 | 41,400 | 13.0 | 25,500 | 10.9 | 16,150 |
| 16 | 32.6 | 146,100 | 23.0 | 86,750 | 18.1 | 56,650 | 16.6 | 47,600 | 13.0 | 25,500 | 10.8 | 15,800 |
| 17 | 32.6 | 146,100 | 22.6 | 84,250 | 18.0 | 56,000 | 17.2 | 51,200 | 12.7 | 24,000 | 10.9 | 16,150 |
| 18 | 32.5 | 145,500 | 22.2 | 81,750 | 17.8 | 54,800 | 17.5 | 53,000 | 12.5 | 23,000 | 10.7 | 15,450 |
| 19 | 32.2 | 143,700 | 21.7 | 78,700 | 17.5 | 53,000 | 17.8 | 54,800 | 12.6 | 23,500 | 10.7 | 15,450 |
| 20 | 31.7 | 140,625 | 21.6 | 78,100 | 17.3 | 51,800 | 17.8 | 54,800 | 13.3 | 27,300 | 10.6 | 15,100 |
| 21 | 31.1 | 136,875 | 21.6 | 78,100 | 16.9 | 49,400 | 17.9 | 55,400 | 13.8 | 30,300 | 10.9 | 16,150 |
| 22 | 30.5 | 133,125 | 21.6 | 78,100 | 16.8 | 48,800 | 17.5 | 53,000 | 14.4 | 33,900 | 11.1 | 16,900 |
| 23 | 30.1 | 130,625 | 21.6 | 78,100 | 16.5 | 47,000 | 17.2 | 51,200 | 14.5 | 34,500 | 11.4 | 18,100 |
| 24 | 31.2 | 137,500 | 21.5 | 77,500 | 16.5 | 47,000 | 17.0 | 50,000 | 14.2 | 32,700 | 12.1 | 21,000 |
| 25 | 33.2 | 149,700 | 21.4 | 76,900 | 16.9 | 49,400 | 16.5 | 47,000 | 14.0 | 31,500 | 12.3 | 22,000 |
| 26 | 34.1 | 155,125 | 21.3 | 76,300 | 17.2 | 51,200 | 15.8 | 42,700 | 13.8 | 30,300 | 12.8 | 24,500 |
| 27 | 31.4 | 138,750 | 21.2 | 75,700 | 17.8 | 54,800 | 15.2 | 38,800 | 13.6 | 29,100 | 12.8 | 24,500 |
| 28 | 29.8 | 128,800 | 20.5 | 71,500 | 18.1 | 56,650 | 14.7 | 35,700 | 13.8 | 30,300 | 13.1 | 26,100 |
| 29 | 29.4 | 126,400 | 20.3 | 70,300 | 18.0 | 56,000 | 14.5 | 34,500 | 14.4 | 33,900 | 13.2 | 26,700 |
| 30 | 29.0 | 124,000 | 20.0 | 68,500 | 17.7 | 54,200 | 14.1 | 32,100 | 14.3 | 33,300 | 13.0 | 25,500 |
| 31 | 28.3 | 119,800 | 19.6 | 66,100 | | | 14.3 | 33,300 | | | 12.9 | 25,000 |

For further meter measurements see Water Resources Papers Nos. 1 and 8.

MONTHLY DISCHARGE of FRASER River at Lytton-above confluence with the Thompson river, for 1914.

(Drainage area, 63,000 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|---------|----------------------------------|-----------------------------------|---------------------------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage Area. | Total in Acre-feet. |
| January | 23,000 | 9,500 | 14,839 | 0.2 | 0.2 | 912,418 |
| February | 31,500 | 9,500 | 19,044 | 0.3 | 0.3 | 1,057,664 |
| March | 28,500 | 13,000 | 18,048 | 0.3 | 0.3 | 1,109,676 |
| April | 14,750 | 13,000 | 13,000 | (for period April 1 to April 4.) | | |
| May | 145,500 | 14,750 | 73,592 | 1.2 | 1.4 | 4,525,004 |
| June | 190,400 | 116,125 | 148,018 | 2.3 | 2.6 | 8,808,062 |
| July | 165,750 | 119,800 | 145,286 | 2.3 | 2.6 | 8,933,446 |
| August | 113,000 | 66,100 | 87,593 | 1.4 | 1.6 | 5,385,873 |
| September | 67,300 | 47,000 | 56,191 | 0.9 | 1.0 | 3,343,569 |
| October | 55,400 | 32,100 | 43,845 | 0.7 | 0.8 | 2,695,945 |
| November | 36,300 | 23,000 | 30,100 | 0.5 | 0.6 | 1,791,100 |
| December | 35,100 | 15,100 | 21,998 | 0.3 | 0.3 | 1,352,578 |
| The year | 190,400 | 9,500 | 56,000 | 0.88 (estimated) | 11.9 | 40,800,000 (estimated) |

NOTE.—The gauge reader at this station, Chas. Lual, was drowned early in April, and it was nearly a month before a suitable gauge reader could be procured to take his place. Consequently, flow records for the greater part of April must remain blank.

The mean annual precipitation at Quesnel is given as 13.23 inches (Meteorological Service, Department of Marine and Fisheries). This is probably somewhat less than the mean annual precipitation over the whole drainage area of the Fraser.

HAT CREEK, ABOVE HAMMOND'S DIVERSION (2016).

Location.—Section 18, township 19, range 26, west 6th meridian: At Colley's ranch, just above the Hammond diversion.

Records Available.—April 22, 1911, to December 31, 1911; January 1, 1912, to November 18, 1912; April 30, 1913, to December 31, 1913; April 1, 1914, to November 30, 1914.

Drainage Area.—Four hundred and twenty square miles.

Gauge.—Standard vertical staff gauge, read daily by Thos. King,

Channel.—The channel is 12 to 14 feet in width and is straight above and below the gauge; the control is good.

Discharge Measurements.—Well-distributed meterings have been obtained covering the stream's range. Meterings were mostly made in the box flume above the Hammond diversion weir.

Winter Flow.—Stream is sometimes open during winter months. Snow-fall is about 4 feet per annum, and rainfall probably 10 to 12 inches, bringing the total precipitation up to 14 to 16 inches, annually.

Accuracy.—Conditions for metering are good and gauge readings are carefully taken. Accuracy is probably within 10 per cent.

DISCHARGE MEASUREMENTS of Hat Creek above Hammond's Diversion, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------|----------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| July 8 | C. B. Corbould | 1,915 | 14.5 | 11.4 | 1.6 | 0.4 | 18.2 |

For further hydrographic data, see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Hat Creek near Hammond's Div.,
for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-08 | 2-0 | 0-73 | 28-6 | 1-08 | 51-0 |
| 2 | 0-07 | 1-7 | 0-95 | 41-7 | 1-08 | 51-0 |
| 3 | 0-08 | 2-0 | 0-83 | 34-3 | 0-93 | 40-5 |
| 4 | 0-10 | 2-5 | 0-68 | 26-0 | 0-93 | 40-5 |
| 5 | 0-09 | 2-2 | 0-61 | 22-5 | 0-93 | 40-5 |
| 6 | 0-16 | 4-0 | 0-73 | 28-6 | 0-83 | 34-3 |
| 7 | 0-12 | 3-0 | 0-73 | 28-6 | 0-83 | 34-3 |
| 8 | 0-28 | 7-8 | 0-78 | 31-4 | 0-83 | 34-3 |
| 9 | 0-33 | 9-7 | 0-83 | 34-3 | 0-83 | 34-3 |
| 10 | 0-28 | 7-8 | 0-98 | 43-7 | 0-83 | 34-3 |
| 11 | 0-33 | 9-7 | 1-13 | 55-2 | 0-83 | 34-3 |
| 12 | 0-26 | 7-1 | 1-13 | 55-2 | 0-88 | 37-3 |
| 13 | 0-33 | 9-7 | 1-20 | 61-5 | 0-93 | 40-5 |
| 14 | 0-26 | 7-1 | 1-38 | 83-3 | 0-93 | 40-5 |
| 15 | 0-33 | 9-7 | 1-30 | 72-5 | 0-95 | 41-7 |
| 16 | 0-28 | 7-8 | 1-23 | 64-8 | 0-93 | 40-5 |
| 17 | 0-35 | 10-5 | 1-13 | 55-2 | 0-93 | 40-5 |
| 18 | 0-33 | 9-7 | 1-00 | 45-0 | 0-83 | 34-3 |
| 19 | 0-43 | 13-8 | 0-93 | 40-5 | 0-80 | 32-5 |
| 20 | 0-38 | 11-7 | 0-93 | 40-5 | 0-73 | 28-6 |
| 21 | 0-45 | 14-8 | 1-13 | 55-2 | 0-73 | 28-6 |
| 22 | 0-41 | 13-0 | 1-13 | 55-2 | 0-71 | 27-5 |
| 23 | 0-43 | 13-8 | 1-28 | 70-3 | 0-68 | 26-0 |
| 24 | 0-41 | 13-0 | 1-23 | 64-8 | 0-68 | 26-0 |
| 25 | 0-43 | 13-8 | 1-08 | 51-0 | 0-68 | 26-0 |
| 26 | 0-41 | 13-0 | 1-03 | 47-2 | 0-63 | 23-5 |
| 27 | 0-43 | 13-8 | 1-03 | 47-2 | 0-63 | 23-5 |
| 28 | 0-48 | 16-1 | 1-03 | 47-2 | 0-63 | 23-5 |
| 29 | 0-46 | 15-2 | 0-93 | 40-5 | 0-63 | 23-5 |
| 30 | 0-55 | 19-5 | 0-83 | 34-3 | 0-60 | 22-0 |
| 31 | | | 0-98 | 43-7 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Hat Creek near Hammond's Div.,
for 1914.—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-58 | 21-0 | 0-21 | 5-3 | 0-10 | 2-5 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 2 | 0-55 | 19-5 | 0-18 | 4-5 | 0-10 | 2-5 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 3 | 0-53 | 18-5 | 0-18 | 4-5 | 0-09 | 2-2 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 4 | 0-53 | 18-5 | 0-18 | 4-5 | 0-09 | 2-2 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 5 | 0-52 | 18-0 | 0-18 | 4-5 | 0-08 | 2-0 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 6 | 0-48 | 16-1 | 0-13 | 3-3 | 0-08 | 2-0 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 7 | 0-48 | 16-1 | 0-13 | 3-3 | 0-08 | 2-0 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 8 | 0-43 | 13-8 | 0-15 | 3-7 | 0-11 | 2-8 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 9 | 0-43 | 13-8 | 0-13 | 3-3 | 0-12 | 3-0 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 10 | 0-38 | 11-7 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 11 | 0-38 | 11-7 | 0-13 | 3-3 | 0-13 | 3-3 | 0-15 | 3-7 | 0-11 | 2-8 | | |
| 12 | 0-38 | 11-7 | 0-13 | 3-3 | 0-13 | 2-8 | 0-15 | 3-7 | 0-11 | 2-8 | | |
| 13 | 0-38 | 11-7 | 0-13 | 3-3 | 0-13 | 3-3 | 0-15 | 3-7 | 0-11 | 2-8 | | |
| 14 | 0-33 | 9-7 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 15 | 0-33 | 9-7 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 16 | 0-33 | 9-7 | 0-13 | 3-3 | 0-14 | 3-5 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 17 | 0-33 | 9-7 | 0-13 | 3-3 | 0-13 | 3-3 | 0-14 | 3-5 | 0-11 | 2-8 | | |
| 18 | 0-33 | 9-7 | 0-13 | 3-3 | 0-23 | 6-0 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 19 | 0-33 | 9-7 | 0-13 | 3-3 | 0-23 | 6-0 | 0-14 | 3-5 | 0-11 | 2-8 | | |
| 20 | 0-33 | 9-7 | 0-12 | 3-0 | 0-21 | 5-3 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 21 | 0-33 | 9-7 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 22 | 0-28 | 7-8 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-11 | 2-8 | | |
| 23 | 0-25 | 6-8 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 24 | 0-25 | 6-8 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-15 | 3-7 | | |
| 25 | 0-25 | 6-8 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-15 | 3-7 | | |
| 26 | 0-23 | 6-0 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 27 | 0-23 | 6-0 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 28 | 0-23 | 6-0 | 0-12 | 3-0 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 29 | 0-23 | 6-0 | 0-10 | 2-5 | 0-11 | 2-8 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 30 | 0-23 | 6-0 | 0-10 | 2-5 | 0-13 | 3-3 | 0-13 | 3-3 | 0-13 | 3-3 | | |
| 31 | 0-21 | 5-3 | 0-10 | 2-5 | | | 0-13 | 3-3 | | | | |

MONTHLY DISCHARGE of Hat Creek above Hammond's Diversion, for 1914.

(Drainage area, 47 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 19-5 | 1-7 | 9-5 | 0-2 | 0-2 | 565 |
| May | 83-3 | 22-5 | 46-8 | 1-0 | 1-1 | 2,878 |
| June | 51-0 | 22-0 | 33-9 | 0-7 | 0-8 | 2,017 |
| July | 21-0 | 5-3 | 11-1 | 0-2 | 0-3 | 680 |
| August | 5-3 | 2-5 | 3-4 | 0-07 | 0-08 | 2-9 |
| September | 6-0 | 2-0 | 3-2 | 0-07 | 0-08 | 190 |
| October | 3-7 | 3-3 | 3-4 | 0-07 | 0-08 | 269 |
| November | 3-7 | 2-8 | 3-1 | 0-06 | 0-07 | 184 |
| The period | 83-3 | 1-7 | 14-3 | 0-30 | 2-71 | 6,932 |

NOTE.—Ice conditions prevailed early in December, when Hat creek was discharging practically no water.

No precipitation records are available for the Hat Creek drainage basin. The mean annual precipitation at Ashcroft is very low—about 5 inches per annum. The precipitation over the Upper Hat Creek valley is, however, considerably in excess of this amount.

SESSIONAL PAPER No. 25e

NAHATLATCH RIVER, UPPER (2028).

Location.—Section 14, township 12, range 27, west 6th meridian.

Records Available.—February 26 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—Three hundred square miles.

Gauge.—Standard chain gauge, read weekly by Chas. Nicholson.

Channel.—The channel is straight at measuring section. Velocities are fairly high.

Discharge Measurements.—Discharge measurements are made from cable car, and curve has been well defined at varying stages.

Winter Flow.—Open water conditions prevailed throughout the winter.

Accuracy.—The accuracy of results will eventually be high. The present results should fall well within 15 per cent.

DISCHARGE MEASUREMENTS of Nahatlatch (Upper) River near Keefers, B.C., for 1914.

| Date | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|-------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 20. | K. G. Chisholm. | 1,055 | 111 | 793 | 4.35 | 8.55 | 3,452 |
| " 30. | E. M. Dann and K. G. C. | 1,055 | 116 | 627 | 3.60 | 6.70 | 2,255 |

For further hydrographic data see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | | | | | | 8-15 | 3,725 | | |
| 2 | | | 6-00 | 1,660 | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | 10-0 | 5,900 | | | | | 4-95 | 1,035 | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | 4-50 | 820 | | | | | 4-90 | 1,010 |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | 6-10 | 1,730 | | |
| 9 | | | 5-50 | 1,340 | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | 8-90 | 4,550 | | | | | 4-60 | 865 | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | 4-20 | 690 | | | | | 4-10 | 650 |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | 5-30 | 1,225 | | |
| 16 | | | 6-10 | 1,730 | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 18 | | | | | | | 8-50 | 4,110 | | | | |
| 19 | 8-30 | 3,890 | | | | | | | | | | |
| 20 | | | | | 6-00 | 1,660 | | | | | 4-10 | 650 |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | 5-00 | 1,160 | | |
| 23 | | | 5-60 | 1,400 | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 25 | | | | | | | 5-50 | 1,340 | | | | |
| 26 | 6-50 | 2,050 | | | | | | | | | 3-90 | 570 |
| 27 | | | | | 5-60 | 1,400 | | | | | | |
| 28 | | | | | | | | | 6-00 | 1,660 | | |
| 29 | | | | | | | | | | | | |
| 30 | | | 5-50 | 1,340 | | | | | | | | |
| 31 | | | | | | | | | | | | |

MONTHLY DISCHARGE of Nahatlatch River at Keefers, B.C., for 1914.

(Drainage area, 300 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 990 | 556 | 800 | 2.7 | 3.1 | 49,190 |
| February | 549 | 408 | 479 | 1.6 | 1.7 | 26,662 |
| March | 1,208 | 437 | 753.8 | 2.5 | 2.9 | 46,349 |
| April | 2,131 | 955 | 1,509.2 | 5.2 | 5.8 | 93,373 |
| May | 5,760 | 2,230 | 3,654.6 | 12.2 | 14.1 | 224,711 |
| June | 4,110 | 2,810 | 3,675 | 12.2 | 13.6 | 218,080 |
| July | 5,900 | 2,050 | 4,497 | 13.7 | 15.8 | 251,967 |
| August | 1,730 | 1,340 | 1,494 | 5.0 | 5.8 | 91,864 |
| September | 1,660 | 690 | 1,142 | 3.8 | 4.2 | 67,950 |
| October | 4,110 | 865 | 1,837 | 6.1 | 7.0 | 112,954 |
| November | 3,725 | 1,100 | 1,900 | 6.3 | 7.0 | 113,058 |
| December | 1,010 | 570 | 720 | 2.4 | 2.8 | 44,271 |
| The year | 5,000 | 409 | 1,843 | 6.14 | 83.8 | 1,340,969 |

NOTE.—Precipitation above the upper station is probably about 70 to 80 inches in normal years. The fact that the "depth in inches on drainage area" for 1914 is 83.8 seems to indicate either an unusually large rainfall or that the drainage area given (300 square miles) is somewhat too small.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Nahatlatch River at Keefers, B.C.,
for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 3-95 | 2,185 | | | | | 6-00 | 4,205 | | |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | 8-20 | 6,570 | | | | | 2-45 | 1,042 | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | 2-10 | 835 | | | | | 2-40 | 1,010 |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | 3-90 | 2,140 | | |
| 9 | | | 3-20 | 1,560 | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | 7-00 | 5,255 | | | | | 2-20 | 890 | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | 1-80 | 655 | | | | | 1-60 | 600 |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | 3-00 | 1,420 | | |
| 16 | | | 3-80 | 2,050 | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 18 | | | | | | | 6-40 | 4,625 | | | | |
| 19 | 6-10 | 4,310 | | | | | | | | | | |
| 20 | | | | | 3-20 | 1,560 | | | | | 1-60 | 600 |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | 2-60 | 1,140 | | |
| 23 | | | 3-20 | 1,560 | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 25 | | | | | | | 3-20 | 1,560 | | | | |
| 26 | 4-30 | 2,500 | | | | | | | | | 1-50 | 555 |
| 27 | | | | | 3-00 | 1,420 | | | | | | |
| 28 | | | | | | | | | 3-80 | 2,050 | | |
| 29 | | | 3-00 | 1,420 | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |

For meterings and further hydrographic data, see Water Resources Papers Nos. 1 and 8.

MONTHLY DISCHARGE of Nahatlatch (Lower) River at Keefers, B.C. for 1914.

(Drainage area, 400 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 1,140 | 600 | 836 | 2-1 | 2-4 | 51,446 |
| February | 520 | 310 | 395 | 1-0 | 1-0 | 21,937 |
| March | 1,385 | 410 | 784 | 2-0 | 2-3 | 48,206 |
| April | 2,500 | 1,140 | 1,910 | 4-8 | 5-3 | 113,650 |
| May | 6,570 | 2,880 | 4,609 | 11-5 | 13-3 | 283,404 |
| June | 5,255 | 3,365 | 4,572 | 11-4 | 12-7 | 272,080 |
| July | 6,570 | 2,500 | 4,659 | 11-6 | 13-4 | 286,469 |
| August | 2,185 | 1,420 | 1,755 | 4-4 | 5-1 | 107,910 |
| September | 1,560 | 085 | 1,125 | 2-8 | 3-1 | 66,940 |
| October | 4,625 | 890 | 2,029 | 5-0 | 5-8 | 124,758 |
| November | 4,205 | 1,140 | 2,191 | 5-5 | 6-1 | 130,369 |
| December | 1,010 | 555 | 091 | 1-7 | 2-0 | 42,488 |
| The year | 6,570 | 310 | 2,130 | 5-3 | 72-5 | 1,849,657 |

NOTE.—No precipitation records available—it is probable, however, that the rainfall is about the same as at the headwaters of the Lillooet river—from 80 to 90 inches annually.

The high run-off in depth in inches on drainage area seems to indicate that the drainage area is slightly too small.

NICOLA RIVER AT MERRITT (2029).

Location.—At Merritt, Water District No. 3.

Records Available.—June 16 to December 31, 1911; January 31 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage Area.—One thousand five hundred square miles.

Gauge.—Standard vertical staff gauge, read tri-weekly by Miss C. A. Seaton.

Channel.—The bed of the stream is gravelly, and the flow is in two channels during high water.

Discharge Measurements.—Four well-distributed measurements have been obtained in 1914.

Winter Flow.—Open conditions usually prevail throughout the year.

Accuracy.—The accuracy is considered to be within 15 per cent of true conditions.

DISCHARGE MEASUREMENTS of Nicola River at Merritt, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| May 3..... | K. G. Chisholm..... | 1505 | 135 | 537 | 4.65 | 7.53 | 2,500 |
| May 25..... | do | 1055 | 135 | 649 | 4.51 | 7.80 | 2,926 |
| July 8..... | do | 1913 | 60 | 306 | 3.45 | 6.07 | 750 |
| July 29..... | C. B. Corbould..... | 1915 | 55 | 245 | 0.90 | 5.10 | 218 |

For further hydrographic data, see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at Merritt, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 4-80 | 130 | 5-00 | 185 | | | | | 7-40 | 2,330 |
| 2 | | | | | | | 5-15 | 255 | 6-40 | 1,055 | | |
| 3 | | | 4-80 | 130 | 5-00 | 185 | 5-30 | 292 | 6-50 | 1,170 | 7-90 | 3,060 |
| 4 | | | | | | | | | | | | |
| 5 | 4-80 | 130 | 4-70 | 104 | 4-90 | 156 | 5-40 | 335 | | | 7-20 | 2,050 |
| 6 | | | | | | | | | 6-90 | 1,640 | | |
| 7 | 5-70 | 490 | 4-60 | 82 | 4-90 | 156 | 5-50 | 380 | | | 6-80 | 1,520 |
| 8 | | | | | | | | | 7-00 | 1,780 | | |
| 9 | 5-50 | 380 | 4-60 | 82 | 4-90 | 156 | 5-80 | 550 | | | 6-80 | 1,520 |
| 10 | | | | | | | | | 7-50 | 2,470 | | |
| 11 | 5-20 | 253 | 4-60 | 82 | 4-80 | 130 | 6-10 | 775 | | | 6-90 | 1,640 |
| 12 | | | | | | | 6-10 | 775 | 7-60 | 2,610 | | |
| 13 | 5-20 | 253 | 4-65 | 93 | 4-80 | 130 | | | | | 6-90 | 1,640 |
| 14 | | | | | | | 6-30 | 955 | 8-40 | 3,790 | | |
| 15 | 5-00 | 185 | 4-65 | 93 | 5-00 | 185 | | | | | 7-10 | 1,915 |
| 16 | | | | | | | 6-60 | 1,280 | 8-20 | 3,500 | | |
| 17 | 5-00 | 185 | 4-65 | 93 | 5-00 | 185 | | | | | 7-10 | 1,915 |
| 18 | | | | | | | 6-50 | 1,170 | 7-60 | 2,610 | | |
| 19 | 5-00 | 185 | 4-65 | 93 | 5-10 | 218 | | | | | 7-00 | 1,780 |
| 20 | | | | | | | 6-60 | 1,280 | 7-60 | 2,610 | | |
| 21 | 4-80 | 130 | 4-70 | 104 | 5-10 | 218 | | | | | 6-70 | 1,395 |
| 22 | | | | | 5-10 | 218 | 6-70 | 1,395 | 7-77 | 2,760 | | |
| 23 | 4-60 | 82 | 4-70 | 104 | | | | | | | 6-60 | 1,280 |
| 24 | | | | | 5-00 | 185 | 6-80 | 1,520 | 8-10 | 3,350 | | |
| 25 | 4-70 | 104 | 4-70 | 104 | | | | | | | 6-60 | 1,280 |
| 26 | | | | | 5-00 | 185 | 6-60 | 1,280 | 7-60 | 2,610 | | |
| 27 | 4-80 | 130 | 4-80 | 130 | | | | | | | 6-60 | 1,280 |
| 28 | | | | | 5-00 | 185 | 6-40 | 1,055 | 7-10 | 1,915 | | |
| 29 | 4-80 | 130 | | | 5-10 | 218 | | | | | 6-50 | 1,170 |
| 30 | | | | | | | 6-30 | 955 | 7-10 | 1,915 | | |
| 31 | 4-80 | 130 | | | 5-10 | 218 | | | | | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at Merritt, for 1914.

| DAY. | July. | | August. | | September. | | October. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 6.40 | 1,055 | 5.00 | 185 | 4.30 | 34 | 4.40 | 50 |
| 2. | 6.30 | 955 | 4.90 | 156 | 4.30 | 34 | 4.40 | 50 |
| 3. | 6.20 | 860 | 4.80 | 130 | 4.30 | 34 | 4.40 | 50 |
| 4. | 6.20 | 860 | 4.80 | 130 | 4.40 | 50 | 4.40 | 50 |
| 5. | 6.20 | 860 | 4.80 | 130 | 4.50 | 64 | 4.30 | 34 |
| 6. | 6.20 | 860 | 4.80 | 130 | 4.50 | 64 | 4.30 | 34 |
| 7. | 6.20 | 860 | 4.80 | 130 | 4.60 | 82 | 4.40 | 50 |
| 8. | 5.90 | 620 | 4.70 | 104 | 4.60 | 82 | 4.40 | 50 |
| 9. | 5.90 | 620 | 4.70 | 104 | 4.60 | 82 | 4.40 | 50 |
| 10. | 5.90 | 620 | 4.70 | 104 | 4.60 | 82 | 4.40 | 50 |
| 11. | 5.80 | 550 | 4.60 | 82 | 4.60 | 82 | 4.50 | 64 |
| 12. | 5.70 | 490 | 4.60 | 82 | 4.60 | 82 | 4.50 | 64 |
| 13. | 5.70 | 490 | 4.60 | 82 | 4.60 | 82 | 4.50 | 64 |
| 14. | 5.70 | 490 | 4.60 | 82 | 4.60 | 82 | 4.50 | 64 |
| 15. | 5.70 | 490 | 4.60 | 82 | 4.60 | 82 | 4.50 | 64 |
| 16. | 5.50 | 380 | 4.50 | 64 | 4.60 | 82 | 4.60 | 82 |
| 17. | 5.50 | 380 | 4.50 | 64 | 4.60 | 82 | 4.60 | 82 |
| 18. | 5.50 | 380 | 4.50 | 64 | 4.60 | 82 | 4.60 | 82 |
| 19. | 5.50 | 380 | 4.50 | 64 | 4.60 | 82 | 4.60 | 82 |
| 20. | 5.50 | 380 | 4.50 | 64 | 4.60 | 82 | 4.60 | 82 |
| 21. | 5.50 | 380 | 4.50 | 64 | 4.60 | 82 | 4.60 | 82 |
| 22. | 5.30 | 292 | 4.50 | 64 | 4.60 | 82 | 4.70 | 104 |
| 23. | 5.30 | 292 | 4.50 | 64 | 4.60 | 82 | 4.70 | 104 |
| 24. | 5.30 | 292 | 4.50 | 64 | 4.60 | 82 | 4.70 | 104 |
| 25. | 5.30 | 292 | 4.50 | 64 | 4.60 | 82 | 4.70 | 104 |
| 26. | 5.20 | 253 | 4.50 | 64 | 4.50 | 64 | 4.60 | 82 |
| 27. | 5.20 | 253 | 4.50 | 64 | 4.50 | 64 | 4.60 | 82 |
| 28. | 5.10 | 218 | 4.40 | 50 | 4.50 | 64 | 4.60 | 82 |
| 29. | 5.10 | 218 | 4.40 | 50 | 4.50 | 64 | 4.60 | 82 |
| 30. | 5.10 | 218 | 4.40 | 50 | 4.50 | 64 | 4.60 | 82 |
| 31. | 5.00 | 185 | 4.40 | 50 | 4.50 | 64 | 4.70 | 104 |

MONTHLY DISCHARGE of Nicola River at Merritt, for 1914.

(Drainage area, 1,500 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 490 | 82 | 198 | 6.13 | 0.15 | 12,175 |
| February | 130 | 82 | 102 | 0.07 | 0.07 | 5,665 |
| March | 218 | 130 | 183 | 0.12 | 0.14 | 11,252 |
| April | 1,520 | 235 | 889 | 0.59 | 0.66 | 52,899 |
| May | 3,790 | 1,055 | 2,386 | 1.59 | 1.83 | 146,712 |
| June | 3,060 | 1,170 | 1,718 | 1.14 | 1.27 | 102,230 |
| July | 1,055 | 185 | 516 | 0.34 | 0.39 | 31,728 |
| August | 185 | 50 | 97 | 0.06 | 0.07 | 5,964 |
| September | 104 | 34 | 67 | 0.04 | 0.04 | 3,987 |
| October | 117 | 34 | 69 | 0.05 | 0.06 | 4,243 |
| The period | 3,790 | 34 | 622.5 | 0.41 | 4.68 | 376,855 |

NOTE.—Precipitation on the Coldwater varies from 10 to 50 inches, while on the Nicola river proper it averages only about 10 inches, and this is subject to large evaporation losses.

The flow at this station includes the flow of Coldwater river.

SESSIONAL PAPER No. 25e

NICOLA RIVER, AT MOUTH (2030).

Location.—Section 12, township 17, range 25, west 6th meridian.

Records Available.—August 1 to November 31, 1911; April 5 to December 21, 1912; May 9 to December 11, 1913; April 1 to September 30, 1914.

Drainage Area.—Two thousand six hundred and fifty square miles.

Gauge.—Inclined staff gauge, read three times a week by Miss Violet Curnow.

Channel.—Is straight at measuring section. Velocity high. Bed of stream is composed of rocks and gravel. During high water on the Thompson river the control is affected at the measuring section but not at the gauge.

Discharge Measurements.—Are made from bridge at all stages.

Winter Flow.—Ice conditions exist usually during January, February and March.

Accuracy.—The accuracy will eventually be high, but at present more measurements are required.

DISCHARGE MEASUREMENTS of Nicola River at mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| May 23..... | K. G. Chisholm..... | 1055 | 144 | 801 | 8.06 | 7.6 | 6.456 |
| July 31..... | C. B. Corbould..... | 1915 | 115 | 197 | 2.40 | 2.42 | 468 |

For further hydrographic data, see Water Resources Papers Nos. 1 and 5.

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DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at mouth, for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec. ft. | Feet. | Sec.-ft. |
| 1 | 2-90 | 575 | | | | |
| 2 | | | | | 7-20 | 5,345 |
| 3 | | | 7-60 | 6,640 | | |
| 4 | 3-30 | 775 | | | | |
| 5 | | | 7-60 | 6,640 | 6-50 | 3,860 |
| 6 | | | 6-40 | 3,710 | | |
| 7 | | | | | 5-80 | 2,955 |
| 8 | 4-80 | 1,870 | | | | |
| 9 | | | 6-60 | 4,025 | | |
| 10 | | | | | 5-60 | 2,725 |
| 11 | 5-10 | 2,165 | | | | |
| 12 | | | 7-80 | 7,370 | | |
| 13 | | | | | 6-40 | 3,710 |
| 14 | | | 7-90 | 7,710 | | |
| 15 | 6-30 | 3,570 | 7-15 | 5,205 | 6-80 | 4,385 |
| 16 | | | | | | |
| 17 | | | | | | |
| 18 | 6-10 | 3,315 | | | | |
| 19 | | | 7-80 | 7,370 | | |
| 20 | | | | | | |
| 21 | 5-80 | 2,955 | | | | |
| 22 | | | | | | |
| 23 | 5-60 | 2,725 | 7-60 | 6,640 | | |
| 24 | | | | | 5-60 | 2,725 |
| 25 | 5-40 | 2,495 | | | | |
| 26 | | | 7-20 | 5,345 | | |
| 27 | | | | | 5-40 | 2,495 |
| 28 | 5-40 | 2,495 | 6-40 | 3,710 | | |
| 29 | | | | | | |
| 30 | 5-60 | 2,725 | | | 5-20 | 2,270 |
| 31 | | | 6-30 | 3,570 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Nicola River at mouth, for 1914—
Concluded.

| DAY. | July. | | August. | | September. | | October. | | November. | |
|---------|---------------|------------|---------------|-------------|---------------|------------|---------------|------------|---------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | | | | | | | | |
| 2..... | 5-20 | 2,270 | | | | | | | | |
| 3..... | | | 2-30 | 335 | 1-50 | 115 | | | | |
| 4..... | | | | | | | | | | |
| 5..... | 4-80 | 1,870 | | | | | | | | |
| 6..... | | | | | 1-40 | 100 | | | | |
| 7..... | | | | | | | | | | |
| 8..... | 4-30 | 1,445 | | | | | | | | |
| 9..... | | | 2-10 | 270 | | | | | | |
| 10..... | | | | | | | | | | |
| 11..... | | | | | | | | | | |
| 12..... | | | | | 1-50 | 115 | | | | |
| 13..... | | | 2-00 | 240 | | | | | | |
| 14..... | | | | | | | | | | |
| 15..... | 4-00 | 1,220 | | | 1-80 | 180 | | | | |
| 16..... | | | | | | | | | | |
| 17..... | | | 1-80 | 180 | | | | | | |
| 18..... | | | | | | | | | | |
| 19..... | | | | | | | | | | |
| 20..... | | | 1-70 | 155 | 1-80 | 180 | | | | |
| 21..... | 3-40 | 830 | | | | | | | | |
| 22..... | | | | | | | | | 4-00 | 1,220 |
| 23..... | | | | | | | | | | |
| 24..... | | | 1-60 | 135 | 1-70 | 155 | | | | |
| 25..... | 2-60 | 450 | | | | | | | 3-70 | 1,020 |
| 26..... | | | | | | | | | | |
| 27..... | | | 1-50 | 115 | 1-90 | 210 | | | | |
| 28..... | 2-55 | 430 | | | | | 1-99 | 210 | 3-40 | 830 |
| 29..... | | | | | 2-00 | 240 | | | | |
| 30..... | | | | | | | | | | |
| 31..... | | | 1-90 | 210 | | | 2-00 | 240 | | |

MONTHLY DISCHARGE of Nicola River at Mouth, for 1914.

(Drainage area, 2,650 square miles.)

| MONTH | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet |
| April..... | 3,570 | 575 | 2,333 | 0-9 | 1-0 | 138,820 |
| May..... | 7,740 | 3,570 | 5,664 | 2-1 | 2-4 | 348,264 |
| June..... | 5,345 | 2,270 | 3,385 | 1-3 | 1-4 | 201,420 |
| July..... | 2,270 | 430 | 1,216 | 0-46 | 0-5 | 74,766 |
| August..... | 335 | 115 | 205 | 0-08 | 0-09 | 12,665 |
| September..... | 240 | 100 | 162 | 0-06 | 0-07 | 9,640 |
| October..... | 240 | 210 | | | | |
| November..... | 1,220 | 830 | | | | |

NOTE.—Gauge readings during October and November were not numerous enough to give accurate run-off data. Precipitation varies from a minimum of 5 to 10 inches at Spences Bridge to 50 inches in the upper reaches of several tributaries of the Nicola river.

The maximum recorded flow was 7,740 second-feet in May, and the minimum 100 second-feet in September.

The autumn rains on the Coldwater-Coquihalla summit probably account for the increased November flow.

SPIUS CREEK (2037).

Location.—Section 23, township 13, range 23, west 6th meridian.

Records Available.—August 18 to November 22, 1911; May 8 to September 12, 1912; May 25 to November 30, 1913; March 22 to December 24, 1914.

Drainage Area.—Three hundred and forty-four (344) square miles.

Gauge.—Standard chain gauge, read daily by G. A. Longbotham.

Channel.—The channel is composed of rocks and boulders; velocity of water is high at all stages.

Discharge Measurements.—Six discharge measurements were obtained during 1914 at varying stages, and curve is fairly well defined.

Winter Flow.—Ice conditions exist from November to February under normal conditions.

Accuracy.—Accuracy of results is considered high, except at freshet, when they should fall within 15 per cent.

DISCHARGE MEASUREMENTS OF Spius Creek near Canford, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Mar. 18..... | K. G. Chisholm..... | 1505 | 70 | 111 | 1.73 | 1.48 | 191 |
| May 5..... | do..... | 1505 | 91 | 234 | 5.51 | 3.04 | 1,309 |
| May 6..... | do..... | 1505 | 90 | 224 | 5.16 | 2.92 | 1,171 |
| May 27..... | do..... | 1055 | 108 | 240 | 5.11 | 3.00 | 1,236 |
| July 19..... | do..... | 1913 | 76 | 138 | 3.60 | 2.08 | 499 |
| July 10..... | C. B. Corbould..... | 1915 | 68 | 67.1 | 1.85 | 1.25 | 120 |

For further hydrographic data on Spius creek, see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Spius Creek, near Canford, for 1914.

| Day. | March. | | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 1-45 | 180 | 2-75 | 1,031 | 4-10 | 2,415 |
| 2..... | | | 1-50 | 198 | 3-35 | 1,627 | 4-35 | 2,677 |
| 3..... | | | 1-50 | 198 | 3-95 | 2,257 | 4-05 | 2,362 |
| 4..... | | | 1-55 | 218 | 2-80 | 1,077 | 2-80 | 1,077 |
| 5..... | | | 1-80 | 335 | 2-95 | 1,221 | 2-75 | 1,031 |
| 6..... | | | 2-15 | 545 | 2-90 | 1,173 | 2-50 | 810 |
| 7..... | | | 2-30 | 650 | 2-90 | 1,173 | 2-65 | 939 |
| 8..... | | | 2-40 | 728 | 3-15 | 1,420 | 2-60 | 894 |
| 9..... | | | 2-50 | 810 | 3-20 | 1,470 | 2-60 | 894 |
| 10..... | | | 2-65 | 939 | 3-25 | 1,522 | 2-65 | 939 |
| 11..... | | | 2-90 | 1,173 | 3-30 | 1,575 | 2-70 | 984 |
| 12..... | | | 2-75 | 1,031 | 3-90 | 2,205 | 2-95 | 1,221 |
| 13..... | | | 3-00 | 1,270 | 3-80 | 2,160 | 3-10 | 1,370 |
| 14..... | | | 3-05 | 1,320 | 4-60 | 2,940 | 2-95 | 1,221 |
| 15..... | | | 3-05 | 1,330 | 4-55 | 2,887 | 3-80 | 2,100 |
| 16 .. | | | 3-10 | 1,370 | 4-35 | 2,677 | 4-10 | 2,415 |
| 17..... | | | 3-60 | 1,270 | 4-60 | 2,310 | 3-70 | 1,995 |
| 18..... | | | 2-90 | 1,173 | 3-75 | 2,047 | 3-30 | 1,375 |
| 19 .. | | | 2-80 | 1,077 | 3-70 | 1,995 | 2-70 | 984 |
| 20..... | | | 2-65 | 939 | 3-90 | 2,205 | 2-50 | 810 |
| 21..... | | | 2-60 | 894 | 4-00 | 2,310 | 2-30 | 650 |
| 22..... | 1-70 | 285 | 2-55 | 852 | 4-20 | 2,520 | 2-35 | 689 |
| 23..... | 1-65 | 261 | 2-55 | 852 | 4-25 | 2,572 | 2-25 | 614 |
| 24..... | 1-60 | 238 | 2-60 | 894 | 4-00 | 2,310 | 2-25 | 614 |
| 25..... | 1-55 | 198 | 2-65 | 939 | 3-25 | 1,522 | 2-30 | 650 |
| 26..... | 1-45 | 180 | 2-60 | 894 | 3-10 | 1,370 | 2-40 | 728 |
| 27..... | 1-40 | 162 | 2-50 | 810 | 3-05 | 1,320 | 2-50 | 810 |
| 28..... | 1-45 | 180 | 2-35 | 769 | 3-10 | 1,370 | 2-55 | 852 |
| 29..... | 1-45 | 180 | 2-45 | 769 | 2-70 | 984 | 2-85 | 1,125 |
| 30 .. | 1-45 | 180 | 2-45 | 769 | 2-95 | 1,221 | 2-80 | 1,077 |
| 31..... | 1-40 | 162 | | | 3-80 | 2,100 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Spius Creek near Canford, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-85 | 1,125 | | 112 | 0-90 | 52 | 1-15 | 96 | 2-40 | 728 | 2-00 | 450 |
| 2 | 2-80 | 1,077 | 1-20 | 107 | 0-90 | 52 | 1-15 | 96 | 2-40 | 728 | 2-00 | 450 |
| 3 | 2-80 | 1,077 | 1-20 | 107 | 0-90 | 52 | 1-15 | 96 | 2-40 | 728 | 2-00 | 450 |
| 4 | 2-50 | 810 | 1-15 | 96 | 0-90 | 52 | 1-10 | 86 | 2-45 | 769 | 1-95 | 420 |
| 5 | 2-40 | 728 | 1-15 | 96 | 0-90 | 52 | 1-10 | 86 | 2-40 | 728 | 1-85 | 362 |
| 6 | 2-35 | 689 | 1-10 | 86 | 0-90 | 52 | 1-05 | 76 | 2-30 | 650 | 1-75 | 310 |
| 7 | 2-25 | 614 | 1-10 | 86 | 0-90 | 52 | 1-05 | 76 | 2-15 | 545 | 1-65 | 261 |
| 8 | 2-20 | 578 | 1-05 | 76 | 1-00 | 67 | 1-05 | 76 | 1-90 | 390 | 1-60 | 238 |
| 9 | 2-20 | 578 | 1-05 | 76 | 1-05 | 76 | 1-10 | 86 | 1-90 | 390 | 1-50 | 198 |
| 10 | 2-25 | 614 | 1-05 | 76 | 1-10 | 86 | 1-10 | 86 | 1-85 | 362 | 1-45 | 180 |
| 11 | 2-20 | 578 | 1-05 | 76 | 1-15 | 96 | 1-10 | 86 | 1-85 | 362 | 1-40 | 162 |
| 12 | 1-95 | 420 | 1-05 | 76 | 1-25 | 120 | 1-10 | 86 | 1-90 | 390 | 1-40 | 162 |
| 13 | 1-90 | 390 | 1-05 | 76 | 1-40 | 162 | 1-15 | 96 | 1-85 | 362 | 1-40 | 162 |
| 14 | 1-85 | 362 | 1-05 | 76 | 1-55 | 218 | 1-20 | 107 | 1-85 | 362 | 1-40 | 162 |
| 15 | 1-85 | 362 | 1-05 | 76 | 1-60 | 238 | 1-25 | 120 | 1-80 | 335 | 1-35 | 147 |
| 16 | 1-80 | 335 | 1-05 | 76 | 1-65 | 261 | 1-30 | 133 | 1-80 | 335 | 1-40 | 162 |
| 17 | 1-80 | 335 | 1-05 | 76 | 1-75 | 310 | 1-35 | 147 | 1-75 | 310 | 1-45 | 180 |
| 18 | 1-70 | 285 | 1-00 | 67 | 1-55 | 218 | 1-40 | 162 | 1-70 | 285 | 1-50 | 198 |
| 19 | 1-65 | 261 | 1-00 | 67 | 1-50 | 198 | 1-40 | 162 | 1-70 | 285 | 1-50 | 198 |
| 20 | 1-50 | 198 | 1-00 | 67 | 1-35 | 147 | 1-50 | 198 | 1-65 | 261 | 1-65 | 261 |
| 21 | 1-45 | 180 | 1-00 | 67 | 1-20 | 107 | 1-55 | 218 | 1-60 | 238 | 1-95 | 420 |
| 22 | 1-40 | 162 | 1-00 | 67 | 1-20 | 107 | 1-65 | 261 | 1-60 | 238 | 2-25 | 614 |
| 23 | 1-40 | 162 | 1-00 | 67 | 1-15 | 96 | 1-65 | 261 | 1-70 | 285 | 2-00 | 450 |
| 24 | 1-40 | 162 | 1-00 | 67 | 1-15 | 96 | 1-65 | 261 | 1-70 | 285 | 2-00 | 450 |
| 25 | 1-40 | 162 | 1-00 | 67 | 1-15 | 96 | 1-60 | 238 | 2-30 | 650 | | |
| 26 | 1-35 | 147 | 1-00 | 67 | 1-15 | 96 | 1-60 | 238 | 2-40 | 728 | | |
| 27 | 2-35 | 147 | 0-95 | 52 | 1-10 | 86 | 1-60 | 238 | 2-15 | 545 | | |
| 28 | | 138 | 0-95 | 59 | 1-15 | 96 | 1-60 | 238 | 2-10 | 512 | | |
| 29 | | 129 | 0-95 | 59 | 1-15 | 96 | 1-60 | 238 | 2-10 | 512 | | |
| 30 | 1-25 | 120 | 0-90 | 52 | 1-15 | 96 | 1-85 | 362 | 2-05 | 481 | | |
| 31 | | 116 | 0-90 | 52 | | | 2-00 | 450 | | | | |

MONTHLY DISCHARGE of Spius Creek near Canford, B.C., for 1914.

(Drainage area, 344 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-------------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 1,370 | 180 | 839-5 | 2-4 | 2-7 | 49,953 |
| May | 2,940 | 984 | 1,823-0 | 5-3 | 6-1 | 112,693 |
| June | 2,677 | 614 | 1,217-4 | 3-5 | 3-9 | 72,444 |
| July | 1,125 | 116 | 420-7 | 1-2 | 1-4 | 25,867 |
| August | 112 | 52 | 75-3 | 0-2 | 0-2 | 4,630 |
| September | 310 | 52 | 117-8 | 0-3 | 0-3 | 7,069 |
| October | 450 | 76 | 166-0 | 0-5 | 0-6 | 10,207 |
| November | 769 | 238 | 459-3 | 1-3 | 1-4 | 27,330 |
| December | 614 | 147 | 293-6 | 0-8 | 0-9 | 18,052 |
| The period. | 2,940 | 52 | 601-4 | 1-7 | 17-5 | 327,585 |

NOTE.—Mean annual precipitation at the mouth of Spius creek is about 10 inches, while in the higher altitudes it is probably about 30 inches.

Winter conditions existed subsequent to December 24.

SESSIONAL PAPER No. 25e

THOMPSON RIVER AT SPENCE'S BRIDGE (2039).

Location.—Section 10, township 17, range 25, west of 6th meridian.

Records available.—October 25 to December 31, 1911; January 1 to December 31, 1912; January 1 to December 31, 1913; January 1 to December 31, 1914.

Drainage area.—Twenty-one thousand square miles.

Gauge.—Gauge is standard chain gauge, situated on traffic bridge, read daily by Miss Violet Curnow.

Channel.—The channel varies in width from 400 feet to 500 feet. Depth of section at high water greater by 16 feet than at low.

Velocities range from 2.0 second-feet to 11 feet per second.

Discharge measurements.—Measurements are made from traffic bridge. Owing to great velocity at high water, meterings are difficult to obtain. However, curve is well defined.

Winter flow.—River usually remains open throughout the year.

Accuracy.—Results are considered to be very accurate, and all returns should fall within 5 per cent of the truth.

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Spence's Bridge for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-----------|---------------|-----------|--------------|-----------|--------------|-----------|---------------|-----------|--------------|-----------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height. | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet | Sec.-ft |
| 1 | 1.90 | 5,870 | 1.70 | 5,640 | 1.91 | 5,870 | 1.75 | 5,695 | 7.8 | 26,880 | 13.5 | 61,170 |
| 2 | 2.00 | 6,000 | 1.70 | 5,640 | 1.86 | 5,750 | 1.70 | 5,640 | 8.1 | 28,300 | 13.5 | 61,170 |
| 3 | 2.10 | 6,140 | 1.70 | 5,640 | 1.85 | 5,810 | 1.75 | 5,695 | 9.2 | 33,840 | 13.5 | 61,170 |
| 4 | 2.20 | 6,290 | 1.60 | 5,530 | 1.80 | 5,750 | 1.80 | 5,750 | 9.6 | 35,920 | 13.5 | 61,170 |
| 5 | 2.20 | 6,290 | 1.50 | 5,425 | 1.80 | 5,750 | 1.90 | 5,870 | 10.0 | 38,000 | 14.1 | 66,080 |
| 6 | 2.30 | 6,450 | 1.50 | 5,425 | 1.75 | 5,695 | 2.00 | 6,000 | 10.0 | 38,000 | 14.6 | 70,240 |
| 7 | 2.40 | 6,620 | 1.50 | 5,425 | 1.70 | 5,640 | 2.30 | 6,450 | 10.3 | 39,660 | 15.3 | 76,240 |
| 8 | 2.50 | 6,800 | 1.45 | 5,375 | 1.65 | 5,585 | 2.50 | 6,800 | 10.6 | 41,340 | 15.0 | 73,680 |
| 9 | 2.60 | 7,000 | 1.50 | 5,425 | 1.60 | 5,530 | 2.70 | 7,240 | 10.7 | 41,900 | 14.8 | 71,910 |
| 10 | 2.60 | 7,000 | 1.60 | 5,530 | 1.65 | 5,585 | 3.00 | 8,000 | 10.8 | 42,460 | 14.5 | 69,405 |
| 11 | 2.50 | 6,800 | 1.70 | 5,640 | 1.70 | 5,640 | 3.30 | 8,830 | 11.0 | 43,630 | 14.5 | 69,405 |
| 12 | 2.40 | 6,620 | 1.70 | 5,640 | 1.70 | 5,640 | 3.60 | 9,670 | 11.4 | 46,100 | 14.6 | 70,240 |
| 13 | 2.40 | 6,620 | 1.75 | 5,695 | 1.75 | 5,695 | 4.00 | 10,850 | 11.9 | 49,330 | 14.7 | 71,075 |
| 14 | 2.30 | 6,450 | 1.80 | 5,750 | 1.80 | 5,750 | 4.40 | 12,230 | 12.4 | 52,795 | 14.9 | 73,750 |
| 15 | 2.30 | 6,450 | 1.80 | 5,750 | 1.80 | 5,750 | 4.80 | 14,020 | 12.8 | 55,730 | 15.0 | 74,660 |
| 16 | 2.30 | 6,450 | 1.80 | 5,750 | 1.75 | 5,695 | 5.30 | 15,660 | 13.1 | 57,250 | 15.0 | 74,660 |
| 17 | 2.30 | 6,450 | 1.75 | 5,695 | 1.75 | 5,695 | 5.70 | 17,340 | 13.2 | 58,770 | 15.9 | 81,520 |
| 18 | 2.20 | 6,290 | 1.70 | 5,610 | 1.80 | 5,730 | 5.80 | 17,760 | 13.4 | 60,370 | 16.3 | 85,040 |
| 19 | 2.20 | 6,290 | 1.70 | 5,640 | 1.80 | 5,730 | 5.90 | 18,180 | 14.8 | 71,910 | 16.7 | 79,760 |
| 20 | 2.10 | 6,140 | 1.75 | 5,695 | 1.80 | 5,730 | 6.40 | 20,440 | 14.3 | 67,740 | 16.5 | 80,080 |
| 21 | 2.10 | 6,140 | 1.70 | 5,640 | 1.85 | 5,810 | 6.50 | 20,960 | 14.3 | 67,740 | 16.35 | 87,240 |
| 22 | 2.10 | 6,140 | 1.70 | 5,610 | 1.85 | 5,810 | 6.60 | 21,380 | 14.1 | 66,080 | 16.3 | 86,040 |
| 23 | 2.00 | 6,000 | 1.75 | 5,695 | 1.90 | 5,870 | 6.70 | 21,800 | 14.2 | 66,940 | 15.9 | 81,520 |
| 24 | 2.00 | 6,000 | 1.70 | 5,610 | 1.90 | 5,870 | 6.80 | 22,220 | 14.3 | 67,740 | 15.7 | 79,760 |
| 25 | 1.90 | 5,870 | 1.70 | 5,640 | 1.85 | 5,810 | 6.90 | 22,740 | 14.3 | 69,405 | 15.5 | 78,000 |
| 26 | 1.80 | 5,750 | 1.75 | 5,695 | 1.80 | 5,750 | 6.90 | 22,740 | 14.8 | 71,910 | 15.0 | 74,660 |
| 27 | 1.80 | 5,750 | 1.80 | 5,730 | 1.80 | 5,750 | 7.15 | 23,800 | 14.8 | 71,910 | 14.6 | 74,660 |
| 28 | 1.60 | 5,530 | 1.90 | 5,870 | 1.90 | 5,870 | 7.15 | 24,800 | 14.7 | 71,075 | 14.2 | 71,490 |
| 29 | 1.45 | 5,375 | | | 1.85 | 5,810 | 7.30 | 24,800 | 14.6 | 70,240 | 14.5 | 71,490 |
| 30 | 1.40 | 5,330 | | | 1.85 | 5,810 | 7.50 | 25,500 | 14.2 | 66,910 | 14.8 | 74,660 |
| 31 | 1.00 | 5,530 | | | 1.80 | 5,750 | | | 13.8 | 61,900 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Thompson River at Spence's Bridge, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 14-8 | 71,910 | 11-0 | 43,600 | 7-30 | 24,580 | 6-60 | 21,360 | 5-70 | 17,340 | 4-80 | 13,650 |
| 2. | 15-0 | 74,600 | 10-7 | 41,900 | 7-00 | 23,200 | 6-80 | 22,280 | 5-80 | 17,760 | 4-80 | 13,650 |
| 3. | 15-1 | 74,480 | 10-65 | 41,620 | 6-80 | 22,280 | 7-00 | 23,200 | 5-80 | 17,760 | 4-80 | 13,650 |
| 4. | 15-2 | 75,360 | 10-7 | 41,900 | 6-63 | 21,360 | 7-30 | 24,580 | 6-00 | 18,600 | 4-70 | 13,280 |
| 5. | 15-4 | 77,120 | 10-5 | 40,780 | 6-50 | 23,900 | 7-30 | 24,580 | 6-20 | 19,520 | 4-65 | 13,095 |
| 6. | 15-6 | 78,880 | 10-6 | 41,310 | 6-50 | 20,900 | 6-80 | 22,280 | 6-40 | 20,440 | 4-50 | 12,550 |
| 7. | 15-4 | 77,120 | 10-4 | 40,220 | 6-23 | 19,520 | 6-50 | 20,900 | 6-70 | 21,820 | 4-40 | 12,200 |
| 8. | 15-2 | 75,360 | 10-3 | 39,630 | 6-20 | 19,520 | 6-30 | 19,980 | 6-50 | 20,900 | 4-30 | 11,860 |
| 9. | 15-0 | 73,600 | 10-2 | 39,160 | 6-26 | 19,520 | 5-90 | 18,180 | 6-30 | 19,980 | 4-30 | 11,860 |
| 10. | 14-35 | 68,155 | 10-1 | 38,540 | 6-20 | 19,520 | 5-80 | 17,760 | 6-10 | 19,060 | 4-20 | 11,520 |
| 11. | 14-3 | 67,740 | 9-7 | 36,440 | 6-20 | 19,520 | 5-80 | 17,760 | 6-00 | 18,600 | 3-70 | 9,950 |
| 12. | 14-3 | 67,740 | 9-4 | 34,880 | 6-23 | 19,520 | 5-90 | 18,180 | 6-00 | 18,600 | 3-40 | 9,110 |
| 13. | 14-3 | 67,740 | 9-3 | 34,360 | 6-20 | 19,520 | 5-70 | 17,340 | 6-10 | 19,060 | 3-40 | 9,110 |
| 14. | 14-35 | 68,155 | 8-90 | 32,300 | 6-20 | 19,520 | 5-60 | 16,920 | 6-00 | 18,600 | 3-20 | 8,550 |
| 15. | 14-4 | 68,570 | 8-63 | 30,800 | 6-10 | 19,060 | 5-50 | 16,500 | 6-00 | 18,600 | 3-10 | 8,270 |
| 16. | 14-6 | 70,240 | 8-60 | 30,800 | 6-00 | 18,600 | 5-40 | 16,080 | 5-80 | 17,760 | 3-00 | 8,000 |
| 17. | 14-5 | 69,405 | 8-63 | 30,800 | 5-83 | 17,760 | 5-30 | 15,660 | 5-60 | 16,920 | 2-90 | 7,740 |
| 18. | 14-4 | 68,570 | 8-40 | 29,800 | 5-50 | 16,500 | 5-30 | 15,660 | 5-50 | 16,500 | 2-80 | 7,490 |
| 19. | 14-0 | 65,250 | 8-40 | 29,800 | 5-46 | 16,080 | 5-40 | 16,080 | 5-40 | 16,080 | 2-80 | 7,490 |
| 20. | 13-7 | 62,770 | 8-30 | 29,300 | 5-20 | 15,240 | 5-83 | 17,760 | 5-30 | 15,660 | 2-80 | 7,490 |
| 21. | 13-3 | 59,570 | 8-23 | 28,800 | 5-40 | 16,080 | 6-00 | 18,600 | 5-20 | 15,240 | 2-80 | 7,490 |
| 22. | 13-3 | 59,570 | 8-23 | 28,800 | 5-80 | 17,760 | 6-20 | 19,520 | 5-10 | 14,820 | 2-90 | 7,740 |
| 23. | 12-9 | 55,590 | 8-10 | 28,360 | 5-83 | 17,760 | 6-50 | 20,900 | 5-10 | 14,820 | 2-90 | 7,740 |
| 24. | 12-6 | 54,250 | 8-10 | 28,300 | 6-00 | 18,600 | 6-30 | 19,980 | 5-10 | 14,820 | 3-00 | 8,000 |
| 25. | 12-1 | 53,680 | 8-10 | 28,300 | 5-93 | 18,180 | 6-00 | 18,600 | 5-10 | 14,820 | 3-00 | 8,000 |
| 26. | 11-9 | 49,330 | 7-80 | 26,880 | 6-00 | 18,600 | 5-83 | 17,760 | 5-00 | 14,400 | 3-10 | 8,270 |
| 27. | 11-9 | 49,330 | 7-83 | 26,880 | 6-00 | 18,600 | 5-65 | 17,130 | 5-00 | 14,400 | 3-10 | 8,270 |
| 28. | 11-8 | 48,670 | 7-70 | 26,420 | 6-00 | 18,600 | 5-70 | 17,340 | 4-90 | 14,020 | 3-10 | 8,270 |
| 29. | 11-7 | 48,020 | 7-63 | 25,960 | 6-20 | 19,520 | 5-60 | 16,920 | 4-90 | 14,020 | 3-20 | 8,550 |
| 30. | 11-6 | 47,380 | 7-56 | 25,500 | 6-30 | 19,980 | 5-55 | 16,710 | 4-8 | 13,650 | 3-20 | 8,550 |
| 31. | 11-3 | 45,460 | 7-40 | 25,040 | | | 5-60 | 16,920 | | | 3-20 | 8,550 |

MONTHLY DISCHARGE of Thompson River at Spence's Bridge for 1914.

(Drainage area, 21,000 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage Area. | Total in Acre-feet. |
| January..... | 7,000 | 5,300 | 6,208 | 0-3 | 0-3 | 381,720 |
| February..... | 5,870 | 5,375 | 5,625 | 0-3 | 0-3 | 312,395 |
| March..... | 5,870 | 5,530 | 5,742 | 0-3 | 0-3 | 353,062 |
| April..... | 25,500 | 5,640 | 14,593 | 0-7 | 0-8 | 868,380 |
| May..... | 71,910 | 26,880 | 54,304 | 2-6 | 3-0 | 3,339,044 |
| June..... | 89,000 | 61,170 | 73,908 | 3-5 | 3-9 | 4,397,875 |
| July..... | 78,880 | 45,460 | 64,210 | 3-0 | 3-4 | 3,948,120 |
| August..... | 43,600 | 25,040 | 33,133 | 1-6 | 1-8 | 2,037,246 |
| September..... | 24,580 | 15,240 | 19,210 | 0-9 | 1-0 | 1,143,690 |
| October..... | 24,580 | 15,660 | 18,820 | 0-9 | 1-0 | 1,157,210 |
| November..... | 21,820 | 13,650 | 17,152 | 0-8 | 0-9 | 1,020,820 |
| December..... | 13,650 | 7,490 | 9,675 | 0-4 | 0-5 | 594,885 |
| The year..... | 89,000 | 5,330 | 26,881 | 1-28 | 17-2 | 19,553,657 |

NOTE.—Precipitation varies from 5 inches at the confluence of the Thompson and Fraser rivers to 49 inches at the Albrede summit and 40 inches at the source of several streams tributary to Shuswap lake.

For meterings and further hydrographic data, see Water Resources Papers Nos. 1 and 8.

SESSIONAL PAPER No. 25e

MISCELLANEOUS METERING STATIONS.

| Date. | Stream. | Tributary to— | Locality. | Gauge | Dis- |
|----------|-------------------|-------------------------|------------------------------|---------|----------|
| | | | | Height. | charge |
| | | | | Feet. | Sec.-ft. |
| May 8 | Alkali creek | Cherry creek | Above Cornwall's div. | — | 2.5 |
| June 11 | " | " | Cornwall's ranch | — | 1.2 |
| " 12 | " | " | Below beaver dam div. | — | 2.2 |
| Sept. 4 | Bear creek | Clearwater river | Crossing Myrtle trail | — | 7.4 |
| June 11 | " | " | " | — | 162.0 |
| " 10 | Beaver creek | " | " | — | 190.4 |
| Sept. 6 | Boulder creek | N. Thompson river | 1 mile from mouth | 1.0 | 19.2 |
| Aug. 12 | Cahilty creek | Louis creek | 1 mile from mouth | 0.95 | 6.8 |
| June 11 | Candle creek | Clearwater river | Larkey's ranch | — | 49.7 |
| Aug. 29 | " | " | " | — | 0.3 |
| June 15 | Chartrand creek | Guiegon creek | At bridge | 1.25 | 4.6 |
| " 16 | Chartrand spring | Chartrand creek | Chartrand ranch | — | 0.5 |
| April 27 | Cherry creek | Kamloops lake | Cornwall's ranch | — | 9.6 |
| May 8 | " | " | " | — | 23.8 |
| " 11 | " | " | " | — | 86.1 |
| June 11 | " | " | " | — | 8.3 |
| " 17 | Dupuis creek | Mamit lake | Above Mamit lake | — | 2.2 |
| " 3 | Edwards creek | Hefley creek | 1 mile above Hefley creek | — | 6.7 |
| Aug. 25 | Fishtrap creek | N. Thompson river | 1 mile from mouth | 0.5 | 11.4 |
| May 27 | Gordon creek | North Thompson river | At highway bridge | — | 1.8 |
| June 17 | Greenstone creek | Meadow creek | Above Homfray dam | — | 10.5 |
| " 15 | Guichon creek | (Chartrand div. of) | At road | — | 2.9 |
| " 13 | " | Mamit lake | F. Allen's ranch | — | 25.8 |
| " 15 | " | " | Chartrand ranch | — | 5.6 |
| " 3 | Hefley creek | (Anderson diversion of) | At intake | — | 3.4 |
| " 10 | Hemp creek | Clearwater | Crossing Clearwater trail | — | 284.0 |
| " 16 | Meadow creek | Guichon creek | Above Indian Reserve ditch | — | 66.7 |
| Sept. 1 | Myrtle river | Clearwater river | At lower crossing | 1.1 | 852.0 |
| May 27 | Noble creek | N. Thompson river | Above B. C. F. div. | — | 6.8 |
| Aug. 7 | Paul creek | " | At outlet of lake | 4.45 | 23.0 |
| May 8 | Pendleton creek | Cherry creek | Above Cornwall's intake | — | 1.3 |
| June 12 | " | " | " | — | 0.6 |
| Aug. 17 | Queest creek | Shuswap lake | ½ mile from mouth | — | 9.2 |
| June 16 | Quenville creek | Guichon creek | Above Quenville div. | — | 2.9 |
| Aug. 12 | Scotch creek | Shuswap lake | 3 miles from mouth | — | 93.5 |
| " 15 | Seymour river | " | 1 mile from mouth | 2.37 | 1,051.0 |
| June 13 | Three-mile creek | Kamloops lake | Harris ranch | — | 6.7 |
| Aug. 21 | N. Thompson river | Thompson river | ○ N. R. bridge near Kamloops | — | 17,775.0 |
| " 25 | Whitewood creek | N. Thompson river | At highway bridge | — | 1.7 |
| June 15 | Witch creek | Guichon creek | ½ mile from mouth | — | 28.1 |

MISCELLANEOUS METERING STATIONS.

| Date. | Stream. | Tributary to— | Locality. | Gauge | Dis- |
|----------------|---------------------------------|-------------------|--------------------------------|---------|----------|
| | | | | Height. | charge |
| | | | | Feet. | Sec.-ft. |
| Aug. 13. | Hat creek (Hammond's diversion) | " | " | — | 7.6 |
| June 16. | Six-mile creek | Tulameen river | Above diversions | 3.77 | 1.0 |
| Nov. 15, 1913. | Twenty-mile creek | Similkameen river | Above intake Nickel Plate mine | 0.70 | 13.2 |
| June 12.. | " | " | " | 2.60 | 236.0 |
| 1914. | " | " | " | — | — |
| June 23.. | " | " | " | 2.00 | 140.0 |
| July 2 | " | " | " | 0.89 | 30.2 |
| Aug. 31. | " | " | " | 0.59 | 12.0 |

REPORT
OF THE
BRITISH COLUMBIA HYDROGRAPHIC
SURVEY FOR 1914

CHAPTER 7

Nelson Division—Hydrographic Data

CHAPTER VII.

Nelson Division.—Hydrographic Data.

REGULAR METERING STATION.

CARIBOO CREEK, NEAR BURTON CITY (3057).

Location.—Upstream side of highway bridge, one-quarter mile from mouth, and one-quarter mile from Burton City wharf, between Upper and Lower Arrow lakes, Nelson district.

Records Available.—August to December, 1914.

Climatic Conditions.—Summers, hot with considerable rain in May and June, and very little rain in July and August. Winters mild, seldom below 0°F. with light snowfall. High water occurs generally in April or May. Extreme floods occur after heavy snowfall, during preceding winter, and continuous hot days and nights or warm rains in the latter part of April or the beginning of May. Low water may occur in August or September or during the winter. The stream does not stay frozen for long periods in the winter. Frazil ice is seldom present.

Gauge.—Located at highway bridge, near Burton. It is affected by backwater from Columbia river during May, June, July, and part of August. Mr. Ralph Islip reads the gauge daily.

Channel.—The channel above and below the gauge is wide and filled with small log jams. It is very liable to shift during high water.

Discharge Measurements.—The curve is based on two discharge measurements made in September and October. A measurement was made early in August, but the gauge height was affected by backwater.

Accuracy.—The results published herein are probably within 20 per cent of the true discharge.

General.—Cariboo creek and its many tributaries rise in the divide between the Arrow lakes and Slocan lake watersheds, between Barton City and New Denver. The drainage area, in all, is about 225 square miles. The freshet is caused by the melting of snow, and not from glaciers.

Cariboo creek deposits large quantities of silt in Columbia river narrows, and is a detriment to navigation. The maximum flow has been estimated at 8,000 c.f.s., but this discharge will only occur once in a long time.

DISCHARGE MEASUREMENTS of Cariboo Creek near Burton City, for 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section. | Mean Velocity | Gauge Height | Discharge |
|---------|---------------------|-----------|-------|------------------|---------------|--------------|-----------|
| | | | Feet | Sq. ft. | Ft. per sec | Feet. | Sec. ft. |
| July 24 | C. E. R. | 1,672 | 46 | 177 | 2.05 | 4.40 | 363 |
| Sept 3 | C. E. R. & J. A. E. | 1,927 | 47 | 144 | 0.94 | 1.28 | 136 |
| Oct 30 | J. A. E. | 1,909 | 63 | 172 | 1.75 | 1.75 | 303 |

¹Affected by backwater

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHTS AND DISCHARGES of Cariboo Creek near Barton City, B.C., for 1914.

| DAY. | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 300 | 1-0 | 77 | 1-28 | 129 | 1-73 | 293 | 1-85 | 348 |
| 2 | | 293 | 1-0 | 77 | 1-28 | 129 | 1-75 | 302 | 1-82 | 334 |
| 3 | | 286 | 1-28 | 129 | 1-26 | 124 | 1-75 | 302 | 1-85 | 348 |
| 4 | | 279 | 1-28 | 129 | 1-25 | 122 | 1-76 | 306 | 1-85 | 348 |
| 5 | | 272 | 1-25 | 122 | 1-25 | 122 | 1-76 | 306 | 1-85 | 348 |
| 6 | | 265 | 1-24 | 120 | 1-2 | 110 | 1-75 | 302 | 1-9 | 372 |
| 7 | 1-65 | 258 | 1-25 | 122 | 1-2 | 110 | 1-75 | 302 | 1-9 | 372 |
| 8 | | 251 | 1-25 | 122 | 1-2 | 110 | 1-78 | 315 | 1-92 | 382 |
| 9 | | 244 | 1-25 | 122 | 1-2 | 110 | 1-78 | 315 | 1-92 | 382 |
| 10 | | 230 | 1-28 | 129 | 1-2 | 110 | 1-78 | 315 | 1-92 | 382 |
| 11 | | | | | | | | | | |
| 12 | | 223 | 1-25 | 122 | 1-22 | 115 | 1-78 | 315 | 1-92 | 382 |
| 13 | 1-55 | 216 | 1-25 | 122 | 1-22 | 115 | 1-8 | 324 | 1-95 | 396 |
| 14 | 1-5 | 196 | 1-2 | 110 | 1-2 | 110 | 1-8 | 324 | 1-95 | 396 |
| 15 | 1-5 | 196 | 1-25 | 122 | 1-2 | 110 | 1-8 | 324 | 1-96 | 401 |
| 16 | 1-4 | 164 | 1-3 | 134 | 1-15 | 103 | 1-8 | 324 | 1-96 | 401 |
| 17 | 1-4 | 164 | 1-28 | 129 | 1-15 | 103 | 1-8 | 324 | 1-96 | 401 |
| 18 | 1-45 | 180 | 1-28 | 129 | 1-15 | 103 | 1-8 | 324 | 1-95 | 396 |
| 19 | 1-4 | 164 | 1-25 | 122 | 1-2 | 110 | 1-8 | 324 | 1-95 | 396 |
| 20 | 1-4 | 164 | 1-25 | 122 | 1-25 | 122 | 1-8 | 324 | 1-95 | 396 |
| 21 | 1-45 | 180 | 1-2 | 110 | 1-4 | 164 | 1-82 | 334 | 1-97 | 406 |
| 22 | 1-45 | 180 | 1-2 | 110 | 1-45 | 180 | 1-82 | 334 | 1-97 | 406 |
| 23 | 1-45 | 180 | 1-25 | 122 | 1-50 | 196 | 1-85 | 348 | 1-97 | 406 |
| 24 | 1-4 | 164 | 1-25 | 122 | 1-6 | 236 | 1-85 | 348 | 1-97 | 406 |
| 25 | 1-4 | 164 | 1-2 | 110 | 1-69 | 276 | 1-85 | 348 | 1-96 | 401 |
| 26 | 1-4 | 164 | 1-2 | 110 | 1-69 | 276 | 1-85 | 348 | 1-96 | 401 |
| 27 | 1-4 | 164 | 1-25 | 122 | 1-68 | 271 | 1-8 | 324 | 1-95 | 396 |
| 28 | 1-4 | 164 | 1-28 | 129 | 1-68 | 271 | 1-8 | 324 | 1-95 | 396 |
| 29 | 1-3 | 134 | 1-27 | 127 | 1-7 | 280 | 1-82 | 334 | 1-95 | 396 |
| 30 | 1-2 | 110 | 1-25 | 122 | 1-75 | 302 | 1-82 | 334 | 1-96 | 401 |
| 31 | 1-2 | 110 | | | 1-73 | 293 | | | 1-96 | 401 |

MONTHLY DISCHARGE of Cariboo Creek near Burton City, B.C., for 1914.

(Drainage area, 225 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| August | | 110 | 203 | 0-90 | 1-04 | 12,500 | |
| September | 134 | 77 | 116 | 0-51 | 0-57 | 6,900 | D |
| October | 302 | 103 | 162 | 0-72 | 0-83 | 9,961 | D |
| November | 348 | 293 | 322 | 1-43 | 1-59 | 19,200 | D |
| December | 406 | 334 | 386 | 1-71 | 1-97 | 23,700 | D |

CARPENTER CREEK NEAR NEW DENVER (3024).

Location.—About 3 miles from the mouth, opposite the Denver Light and Power Company's power-house, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Summers, hot. May and June are generally wet, but there is very little rain in July and August. Winters not severe, seldom below zero. Snowfall is not heavy in the lower altitudes.

SESSIONAL PAPER No. 25e

Gauge.—Vertical staff enamel gauge was originally established immediately above the dam, but in December it was moved below the dam and opposite the power-house. Mr. C. J. Campbell reads the gauge three times a week.

Channel.—The channel generally below the dam and canyon is rocky and filled with huge boulders, but at the new gauge should be fairly permanent, though the water will be very broken during freshet.

Discharge Measurements.—No desirable metering station has as yet been established. Five measurements were made in 1914 from the highway bridge near New Denver. At this section and for a mile above the creek is flowing through a shifting gravel bed, and it is doubtful if the total discharge at the gauge is recorded when measurements are made from the bridge.

Accuracy.—The results published are not guaranteed.

General.—Carpenter creek is a flashy mountain stream, flowing from the east into Slocan lake, near New Denver. The drainage area is about 65 square miles of very mountainous country, abundant in mineral wealth. Glaciers feed the various forks. Heavy freshets are liable to occur in May, June, or July.

The water is used for mining and power purposes. The only plant operating at present on Carpenter creek is the Denver Light and Power Company, Ltd., Mr. C. J. Campbell, manager. The plant is located at the canyon about 3 miles above New Denver. The head is about 100 feet and a 93.75-k.v.a. C.G.E. generator is installed. At present, in the neighbourhood of 100 h.p. is developed.

DISCHARGE MEASUREMENTS of Carpenter Creek at New Denver, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------|-----------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| April 16 . . | C. E. W., D. O. B. G. | 1,048 | 199 | 96.6 | 5.60 | 1.9 | 541.0 |
| May 13 . . . | J. A. E., G. K. B. | 1,672 | 200 | 130 | 7.28 | 2.35 | 919.0 |
| July 9 | D. O. R. G., J. A. E. | 1,929 | 199 | 132 | 5.19 | 2.10 | 684.0 |
| Aug. 18 . . . | D. O. B. Gill | 1,929 | 33 | 47 | 3.83 | 1.10 | 180.0 |
| Nov. 4 | J. A. E., G. K. B. | 1,969 | 32 | 47 | 4.28 | 0.90 | 180.0 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Carpenter Creek near New Denver,
B.C., for 1914.

| Day. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 2-0 | 610 | 2-6 | 1,140 |
| 2 | | | 2-1 | 690 | 3-0 | 1,550 |
| 3 | | | 2-4 | 950 | 3-4 | 1,990 |
| 4 | | | 2-1 | 690 | 3-2 | 1,770 |
| 5 | | | 2-0 | 610 | 2-6 | 1,140 |
| 6 | | | 1-9 | 540 | 2-2 | 775 |
| 7 | | | 1-8 | 472 | 2-0 | 610 |
| 8 | | | 1-95 | 575 | 1-9 | 540 |
| 9 | | | 2-3 | 860 | 1-9 | 540 |
| 10 | | | 2-25 | 817 | 1-9 | 540 |
| 11 | | | 2-1 | 690 | 2-0 | 610 |
| 12 | | | 2-35 | 860 | 2-1 | 690 |
| 13 | | | 2-6 | 905 | 2-3 | 860 |
| 14 | | | 2-6 | 1,140 | 2-4 | 950 |
| 15 | | | 2-75 | 1,290 | 2-7 | 1,240 |
| 16 | | | 2-85 | 1,390 | 2-85 | 1,390 |
| 17 | | | 2-7 | 1,240 | 3-0 | 1,550 |
| 18 | | | 2-5 | 1,040 | 2-9 | 1,440 |
| 19 | | | 2-5 | 1,040 | 2-7 | 1,240 |
| 20 | 1-7 | 414 | 2-5 | 1,040 | 2-5 | 1,040 |
| 21 | | 396 | 2-6 | 1,140 | 2-2 | 775 |
| 22 | | 378 | 2-6 | 1,140 | 2-1 | 690 |
| 23 | 1-6 | 360 | 2-6 | 1,140 | 2-0 | 610 |
| 24 | 1-6 | 360 | 2-7 | 1,240 | 2-0 | 610 |
| 25 | | 337 | 2-6 | 1,140 | 2-0 | 610 |
| 26 | 1-5 | 315 | | 1,000 | 2-1 | 690 |
| 27 | 1-6 | 360 | 2-3 | 860 | 2-2 | 775 |
| 28 | | 260 | 2-2 | 775 | 2-2 | 775 |
| 29 | 1-6 | 360 | 2-1 | 690 | 2-3 | 860 |
| 30 | 1-7 | 414 | 2-1 | 690 | 2-3 | 860 |
| 31 | | | 2-3 | 860 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Carpenter Creek near New Denver, B.C., for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|------------|--------------|------------|--------------------|------------|--------------|------------|--------------|------------|--------------|-------------|
| | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. [*] | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2.4 | 950 | | 340 | 0.90 | 159 | 0.90 | 159 | 0.8 | 144 | 0.4 | 99 |
| 2 | 2.4 | 950 | 1.5 | 315 | 0.80 | 144 | 0.85 | 166 | 1.0 | 174 | 0.4 | 99 |
| 3 | 2.6 | 1,140 | 1.5 | 315 | 0.80 | 144 | 0.85 | 151 | 1.0 | 174 | 0.4 | 99 |
| 4 | 2.5 | 1,040 | 1.5 | 315 | 0.80 | 144 | 0.80 | 144 | 0.9 | 159 | 0.4 | 99 |
| 5 | 2.4 | 950 | 1.4 | 278 | 0.80 | 144 | | 144 | 1.1 | 194 | 0.3 | 91 |
| 6 | | 817 | 1.4 | 278 | 0.80 | 144 | 0.80 | 144 | 0.9 | 159 | 0.3 | 91 |
| 7 | 2.2 | 775 | | 261 | 0.80 | 144 | 0.80 | 144 | 0.8 | 144 | 0.3 | 91 |
| 8 | | 732 | 1.3 | 245 | 0.80 | 144 | 0.80 | 144 | 0.8 | 144 | 0.3 | 91 |
| 9 | 2.1 | 690 | | 245 | 0.80 | 144 | 0.80 | 144 | 0.8 | 144 | 0.3 | 91 |
| 10 | | 650 | 1.3 | 245 | 0.80 | 144 | 0.80 | 144 | 0.8 | 144 | 0.3 | 91 |
| 11 | 2.0 | 610 | | 245 | 0.80 | 144 | 0.80 | 144 | 0.8 | 144 | 0.3 | 91 |
| 12 | 2.1 | 690 | 1.3 | 245 | 0.80 | 144 | 0.80 | 144 | 0.8 | 144 | | 91 |
| 13 | 2.4 | 950 | | 231 | 0.80 | 144 | 0.80 | 144 | 0.7 | 130 | | 91 |
| 14 | | 841 | 1.2 | 217 | 0.8 | 144 | 0.80 | 144 | 0.6 | 118 | | 91 |
| 15 | 2.15 | 732 | 1.2 | 217 | 0.8 | 144 | 0.80 | 144 | 0.6 | 118 | | 91 |
| 16 | 1.85 | 506 | 1.2 | 217 | 0.8 | 144 | 0.8 | 144 | 0.6 | 118 | | 91 |
| 17 | 1.8 | 472 | 1.3 | 245 | 0.8 | 144 | 1.0 | 174 | 0.6 | 118 | | 91 |
| 18 | 1.75 | 443 | 1.25 | 231 | 0.85 | 151 | 1.0 | 174 | 0.3 | 91 | | 91 |
| 19 | 1.85 | 506 | 1.0 | 224 | 1.15 | 205 | 1.0 | 174 | 0.5 | 108 | | 91 |
| 20 | | 513 | 1.2 | 217 | 1.1 | 194 | 1.0 | 174 | 0.5 | 108 | 0.4 | 99 |
| 21 | | 520 | | 217 | 1.0 | 174 | 0.85 | 151 | 0.5 | 108 | 0.4 | 99 |
| 22 | | 527 | 1.2 | 217 | 0.9 | 159 | 0.80 | 144 | 0.5 | 108 | 0.25 | 88 |
| 23 | | 534 | 1.1 | 194 | 0.8 | 144 | 0.80 | 144 | 0.5 | 108 | 0.2 | 85 |
| 24 | 1.90 | 540 | | 194 | 0.8 | 144 | 0.80 | 144 | 0.4 | 99 | 0.2 | 85 |
| 25 | 1.90 | 540 | 1.1 | 194 | 0.8 | 144 | 0.80 | 144 | 0.4 | 99 | 0.2 | 85 |
| 26 | 1.80 | 472 | | 194 | 1.05 | 184 | | 144 | 0.4 | 99 | 0.1 | 79 |
| 27 | | 443 | 1.1 | 194 | 1.2 | 217 | | 144 | 0.4 | 99 | 0.1 | 79 |
| 28 | 1.70 | 414 | | 189 | 1.05 | 184 | | 144 | 0.4 | 99 | 0.1 | 79 |
| 29 | 1.60 | 360 | 1.05 | 184 | 1.00 | 174 | | 144 | 0.4 | 99 | 0.1 | 79 |
| 30 | | 360 | 1.00 | 174 | 0.90 | 159 | 0.80 | 144 | 0.4 | 99 | 0.1 | 79 |
| 31 | 1.60 | 360 | 0.90 | 159 | | | 0.80 | 144 | | | 0.1 | 79 |

MONTHLY DISCHARGE of Carpenter Creek near New Denver, for 1914.

(Drainage area, 65 square miles.)

| Month. | DISCHARGE IN SECOND FEET. | | | | RUN-OFF. | |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Menn. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| April | 1,300 | 472 | 905 | 13.9 | 16.0 | 55,700 |
| May | 1,990 | 540 | 962 | 14.8 | 16.5 | 57,200 |
| June | 1,140 | 360 | 646 | 9.94 | 11.5 | 39,700 |
| July | 340 | 159 | 233 | 3.58 | 4.13 | 14,300 |
| August | 217 | 144 | 157 | 2.42 | 2.70 | 9,340 |
| September | 174 | 144 | 148 | 2.28 | 2.63 | 9,100 |
| October | 194 | 91 | 126 | 1.94 | 2.16 | 7,500 |
| November | 90 | 79 | 92.5 | 1.42 | 1.64 | 5,600 |
| December | | | | | | |
| The period | | | | | | |

6 GEORGE V, A. 1916

CARPENTER CREEK, SOUTH FORK, NEAR SANDON (3025).

Location.—In the flume back of the C.P.R. station at Sandon, behind a deserted bakery, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Similar to Carpenter creek, New Denver, only the winters are longer, with more snow. Frazil ice is a possibility.

Gauge.—Enamel gauge, 0 feet to 3 feet, placed at the side of the box flume. Mrs. E. A. Cameron reads the gauge daily.

Flume.—The creek is flumed for several hundred feet through the townsite of Sandon. The flume is a box flume, 11.67 feet wide by 6 feet deep. For 50 feet above and below the section the slope is 0.056 feet. Kutter's formula was applied to determine the daily discharges.

Accuracy.—During high water the results are probably within 10 per cent, but at low stages, due to the gauge being only read to tenths, no accuracy can be given. A measurement made by Messrs. Webb and Gill, in April, agrees closely with the slope method.

General.—Sandon is about 6 miles from the source of the south fork of Carpenter creek, and is at an altitude of 3,488 feet. The drainage area, from the topographical map of the Geological Survey appears to be only about 12 miles. This shows a tremendous run-off per square mile during the months of May, June, and July.

The south fork has been used a great deal for mining, particularly during 1896-1902, but at present no water is used.

DAILY GAUGE HEIGHT AND DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.

| DAY. | April. | | May. | | June. | |
|------|--------------|------------|--------------|------------|--------------|-------------|
| | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0-4 | 114 | 0-85 | 310 |
| 2 | | | 0-6 | 192 | 1-10 | 444 |
| 3 | | | 0-8 | 284 | 1-65 | 778 |
| 4 | | | 0-6 | 192 | 1-30 | 560 |
| 5 | | | 0-4 | 114 | 1-00 | 388 |
| 6 | | | 0-4 | 114 | 0-80 | 284 |
| 7 | | | 0-4 | 114 | 0-80 | 284 |
| 8 | | | 0-4 | 114 | 0-65 | 214 |
| 9 | | | 0-6 | 192 | 0-60 | 192 |
| 10 | | | 0-65 | 214 | 0-55 | 171 |
| 11 | | | 0-7 | 235 | 0-55 | 171 |
| 12 | | | 0-8 | 284 | 0-55 | 171 |
| 13 | | | 0-9 | 335 | 0-85 | 310 |
| 14 | | | 0-95 | 362 | 1-1 | 444 |
| 15 | | | 1-00 | 388 | 1-35 | 590 |
| 16 | | | 0-95 | 362 | 1-55 | 714 |
| 17 | | | 0-9 | 335 | 1-65 | 778 |
| 18 | | | 0-8 | 284 | 1-65 | 778 |
| 19 | | | 0-8 | 284 | 1-3 | 560 |
| 20 | | | 0-85 | 310 | 1-0 | 388 |
| 21 | | | 0-85 | 310 | 0-8 | 284 |
| 22 | | | 0-85 | 310 | 0-7 | 235 |
| 23 | | | 0-85 | 310 | 0-6 | 192 |
| 24 | | | 0-85 | 310 | 0-6 | 192 |
| 25 | | | 0-9 | 335 | 0-65 | 214 |
| 26 | | | 0-2 | 52 | 0-8 | 284 |
| 27 | | | 0-3 | 82 | 0-8 | 284 |
| 28 | | | 0-2 | 52 | 0-75 | 260 |
| 29 | | | 0-2 | 52 | 0-80 | 284 |
| 30 | | | 0-3 | 82 | 0-55 | 171 |
| 31 | | | | 0-55 | 171 | |

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DAILY GAUGE HEIGHT AND DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.—(Con.)

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-95 | 362 | 0-30 | 82 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 2 | 1-1 | 444 | 0-30 | 82 | 0-0 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 3 | 1-35 | 590 | 0-30 | 82 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 4 | 1-05 | 416 | 0-20 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 5 | 0-9 | 335 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 6 | 0-85 | 310 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 7 | 0-85 | 310 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 8 | 0-8 | 284 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 9 | 0-75 | 260 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 10 | 0-7 | 235 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 11 | 0-65 | 214 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 12 | 0-75 | 260 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 13 | 0-75 | 260 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 14 | 0-7 | 235 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-2 | 52 | 0-1 | 27 |
| 15 | 0-7 | 235 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 16 | 0-6 | 192 | 0-2 | 52 | 0-10 | 27 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 17 | 0-55 | 171 | 0-20 | 52 | 0-10 | 27 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 18 | 0-55 | 171 | 0-20 | 52 | 0-10 | 27 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 19 | 0-50 | 150 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 20 | 0-40 | 114 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 21 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 22 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 23 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 24 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 25 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 26 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 27 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 28 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 29 | 0-30 | 82 | 0-20 | 52 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 30 | 0-30 | 82 | 0-10 | 27 | 0-20 | 52 | 0-20 | 52 | 0-1 | 27 | 0-1 | 27 |
| 31 | 0-30 | 82 | 0-10 | 27 | ..... | ..... | 0-20 | 52 | ..... | ..... | 0-1 | 27 |

MONTHLY DISCHARGE of south fork of Carpenter Creek near Sandon, B.C., for 1914.

(Drainage area, 12 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|------------------------------------|--------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth. in inches on Drainage area. | Total in acre-feet | |
| | | | | | | | |
| May | 388 | 114 | 249 | 20-8 | 24-0 | 15,300 | B |
| June | 778 | 171 | 367 | 30-6 | 34-1 | 21,800 | B |
| July | 590 | 82 | 208 | 17-3 | 19-9 | 12,800 | C |
| August | 82 | 27 | 53-3 | 4-44 | 5-12 | 3,280 | |
| September | 52 | 27 | 37-0 | 3-08 | 3-44 | 2,200 | |
| October | 52 | 52 | 52-0 | 4-33 | 4-99 | 3,200 | |
| November | 52 | 27 | 38-7 | 3-22 | 3-59 | 2,300 | |
| December | 27 | 27 | 27-0 | 2-25 | 2-59 | 1,660 | |

COLUMBIA RIVER NEAR CASTLEGAR (3004).

Location.—Castlegar precinct, Nelson Water district, below Arrow lakes and above mouth of Kootenay river, at the C.P.R. bridge near Castlegar, B.C., Nelson district.

Records Available.—1913 and 1914.

Climatic Conditions.—Summers hot, with plenty of rain in May and June, but very little rain in July and August. Winters, the snowfall is not very heavy, the temperature seldom goes below 0°F.; the river rarely freezes over.

Gauge.—Vertical staff gauge was used till August, when a chain gauge was established. Messrs. P. G. Farmer, J. McE. Agnew, and J. A. Turnbull read the gauges at different times during the year.

Channel.—Straight for 200 yards above and below the measuring section and gauge. A pronounced riffle in low water is lost during high water. The rise and fall of the river is about 25 feet.

Discharge Measurements.—Measurements are made from the upstream side of the railway bridge. Five measurements were made in 1914.

Accuracy.—This station is maintained chiefly to check the results obtained from Kootenay river near Glade, and Columbia river near Trail. Due to a probability of backwater, these results are not guaranteed.

DISCHARGE MEASUREMENTS of Columbia River near Castlegar, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------------|----------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Jan. 14 | C. E. W. and A. J. V. | 1048 | 380 | 6,800 | 1.66 | 1.7 | 11,300 |
| Mar. 5 | C. E. R. and A. J. V. | 1672 | 398 | 6,170 | 1.24 | 0.72 | 7,680 |
| May 31 | J. A. Elliott | 1909 | 515 | 14,100 | 5.82 | 15.12 | 82,100 |
| July 28 | G. K. Beeston | 1672 | 530 | 13,500 | 7.67 | 17.52 | 104,000 |
| Aug. 6 | G. K. B. and D. O. R. G. | 1929 | 515 | 12,900 | 6.60 | 15.8 | 85,100 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Castlegar,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 1.3 | 9,600 | 0.8 | 8,000 | 0.8 | 8,000 | 1.0 | 8,600 | 6.6 | 33,000 | 17.3 | 91,100 |
| 2. | 1.2 | 9,200 | 0.8 | 8,000 | 0.8 | 8,000 | 1.0 | 8,600 | 7.0 | 35,000 | 17.9 | 94,600 |
| 3. | 1.2 | 9,200 | 0.8 | 8,000 | 0.8 | 8,000 | 1.0 | 8,600 | 7.4 | 37,000 | 18.3 | 96,900 |
| 4. | 1.2 | 9,200 | 0.7 | 7,700 | 0.8 | 8,000 | 1.0 | 8,600 | 7.6 | 38,000 | 18.8 | 99,800 |
| 5. | 1.2 | 9,200 | 0.7 | 7,700 | 0.8 | 8,000 | 1.1 | 8,900 | 7.8 | 39,000 | 19.2 | 102,000 |
| 6. | 1.1 | 8,900 | 0.7 | 7,700 | 0.8 | 8,000 | 1.2 | 9,200 | 8.1 | 40,500 | 19.3 | 103,000 |
| 7. | 1.1 | 8,900 | 0.7 | 7,700 | 0.8 | 8,000 | 1.2 | 9,200 | 8.5 | 42,700 | 19.1 | 102,000 |
| 8. | 1.1 | 8,900 | 0.6 | 7,400 | 0.8 | 8,000 | 1.3 | 9,600 | 8.9 | 44,800 | 19.0 | 101,000 |
| 9. | 1.2 | 9,200 | 0.6 | 7,400 | 0.8 | 8,000 | 1.5 | 10,200 | 9.4 | 47,500 | 18.9 | 100,000 |
| 10. | 1.3 | 9,600 | 0.5 | 7,100 | 0.8 | 8,000 | 1.8 | 11,300 | 9.9 | 50,200 | 18.4 | 97,500 |
| 11. | 1.3 | 9,600 | 0.5 | 7,100 | 0.8 | 8,000 | 2.0 | 12,000 | 10.2 | 51,800 | 18.4 | 97,500 |
| 12. | 1.3 | 9,600 | 0.5 | 7,100 | 0.8 | 8,000 | 2.3 | 13,200 | 10.8 | 55,100 | 18.5 | 98,000 |
| 13. | 1.4 | 9,900 | 0.5 | 7,100 | 0.8 | 8,000 | 2.5 | 14,000 | 11.4 | 58,400 | 18.7 | 99,200 |
| 14. | 1.5 | 10,200 | 0.5 | 7,100 | 0.8 | 8,000 | 2.7 | 14,800 | 12.0 | 61,700 | 18.8 | 99,800 |
| 15. | 1.6 | 10,600 | 0.5 | 7,100 | 0.8 | 8,000 | 2.9 | 15,600 | 12.6 | 65,000 | 19.0 | 101,000 |
| 16. | 1.6 | 10,600 | 0.4 | 6,800 | 0.8 | 8,000 | 3.0 | 16,000 | 13.6 | 70,500 | 19.6 | 105,000 |
| 17. | 1.5 | 10,200 | 0.4 | 6,800 | 0.8 | 8,000 | 3.3 | 17,200 | 14.0 | 72,700 | 20.6 | 111,000 |
| 18. | 1.5 | 10,200 | 0.4 | 6,800 | 0.8 | 8,000 | 3.6 | 18,500 | 14.2 | 73,800 | 21.4 | 115,000 |
| 19. | 1.4 | 9,900 | 0.5 | 7,100 | 0.8 | 8,000 | 3.9 | 19,800 | 14.6 | 76,000 | 22.2 | 120,000 |
| 20. | 1.3 | 9,600 | 0.5 | 7,100 | 0.8 | 8,000 | 4.2 | 21,200 | 14.8 | 77,100 | 22.6 | 123,000 |
| 21. | 1.3 | 9,600 | 0.6 | 7,400 | 0.9 | 8,300 | 4.5 | 22,600 | 15.2 | 79,300 | 23.0 | 125,000 |
| 22. | 1.3 | 9,600 | 0.6 | 7,400 | 0.9 | 8,300 | 4.8 | 24,000 | 15.2 | 79,300 | 22.6 | 123,000 |
| 23. | 1.3 | 9,600 | 0.6 | 7,400 | 0.9 | 8,300 | 5.1 | 25,500 | 15.4 | 80,500 | 22.4 | 122,000 |
| 24. | 1.3 | 9,600 | 0.7 | 7,700 | 0.9 | 8,300 | 5.4 | 27,000 | 15.7 | 82,100 | 22.2 | 120,000 |
| 25. | 1.2 | 9,200 | 0.7 | 7,700 | 0.9 | 8,300 | 5.6 | 28,000 | 16.0 | 83,800 | 21.8 | 118,000 |
| 26. | 1.2 | 9,200 | 0.8 | 8,000 | 1.0 | 8,600 | 5.8 | 29,000 | 16.2 | 84,900 | 21.2 | 114,000 |
| 27. | 1.1 | 8,900 | 0.8 | 8,000 | 1.0 | 8,600 | 6.0 | 30,000 | 16.4 | 86,100 | 21.0 | 113,000 |
| 28. | 1.0 | 8,600 | 0.8 | 8,000 | 1.0 | 8,600 | 6.2 | 31,000 | 16.6 | 87,200 | 20.8 | 112,000 |
| 29. | 1.0 | 8,600 | ..... | ..... | 1.0 | 8,600 | 6.2 | 31,000 | 16.6 | 87,200 | 20.6 | 111,000 |
| 30. | 0.9 | 8,300 | ..... | ..... | 1.1 | 8,900 | 6.4 | 32,000 | 16.8 | 88,300 | 20.4 | 110,000 |
| 31. | 0.9 | 8,300 | ..... | ..... | 1.1 | 8,900 | ..... | ..... | 17.0 | 89,400 | ..... | ..... |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Castlegar, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 20-6 | 111,000 | ..... | 89,400 | 11-3 | 57,800 | 6-3 | 31,500 | 5-0 | 25,000 | 3-8 | 19,400 |
| 2..... | 20-8 | 112,000 | ..... | 86,600 | 11-1 | 56,700 | 6-2 | 31,000 | 5-0 | 25,000 | 4-0 | 20,200 |
| 3..... | 21-0 | 113,000 | ..... | 83,800 | 11-0 | 56,200 | 6-4 | 32,000 | 4-9 | 24,500 | 4-1 | 20,700 |
| 4..... | 21-6 | 116,000 | ..... | 83,000 | 10-8 | 55,100 | 6-6 | 33,000 | 4-8 | 24,000 | 4-0 | 20,200 |
| 5..... | 22-1 | 120,000 | ..... | 82,300 | 10-7 | 54,500 | 6-9 | 34,500 | 4-9 | 24,500 | 4-0 | 20,200 |
| 6..... | 22-8 | 124,000 | 15-6 | 81,600 | 10-5 | 53,500 | 7-0 | 35,000 | 5-0 | 25,000 | 3-8 | 19,400 |
| 7..... | 23-2 | 126,000 | 15-6 | 81,600 | 10-4 | 52,900 | 7-2 | 36,000 | 5-2 | 26,000 | 3-4 | 17,700 |
| 8..... | 23-6 | 128,000 | 15-4 | 80,500 | 10-2 | 51,800 | 7-3 | 36,500 | 5-1 | 25,500 | 3-5 | 18,100 |
| 9..... | 23-6 | 128,000 | 15-0 | 78,200 | 10-0 | 50,800 | 6-8 | 34,000 | 5-0 | 25,000 | 3-4 | 17,700 |
| 10..... | 23-4 | 127,000 | 14-8 | 77,100 | 9-9 | 50,200 | 6-6 | 33,000 | 5-1 | 25,500 | 3-3 | 17,200 |
| 11..... | 23-3 | 127,000 | 14-6 | 76,000 | 9-7 | 49,100 | 6-6 | 33,000 | 5-0 | 25,000 | 3-2 | 16,800 |
| 12..... | 23-2 | 126,000 | 14-2 | 73,800 | 9-5 | 48,100 | 6-5 | 32,500 | 5-1 | 25,500 | 3-1 | 16,400 |
| 13..... | 23-1 | 126,000 | 13-9 | 72,100 | 9-4 | 47,500 | 6-5 | 32,500 | 5-1 | 25,500 | 3-0 | 16,000 |
| 14..... | 23-6 | 128,000 | 13-6 | 70,500 | 9-2 | 46,400 | 6-4 | 32,000 | 5-0 | 25,000 | 2-8 | 15,200 |
| 15..... | 23-8 | 129,000 | 13-3 | 68,800 | 9-0 | 45,400 | 6-2 | 31,000 | 5-0 | 25,000 | 2-8 | 15,200 |
| 16..... | 24-0 | 131,000 | 13-2 | 68,300 | 8-7 | 43,800 | 5-9 | 29,500 | 5-0 | 25,000 | 2-8 | 15,200 |
| 17..... | 24-3 | 133,000 | 13-0 | 67,200 | 8-4 | 42,200 | 5-8 | 29,000 | 4-9 | 24,500 | 2-7 | 14,800 |
| 18..... | 24-0 | 131,000 | 12-9 | 66,600 | 8-1 | 40,500 | 5-6 | 28,000 | 4-8 | 24,000 | 2-6 | 14,400 |
| 19..... | 23-6 | 128,000 | 12-9 | 66,600 | 7-9 | 39,500 | 5-8 | 29,000 | 4-8 | 24,000 | 2-4 | 13,600 |
| 20..... | 23-4 | 127,000 | 12-8 | 66,100 | 7-7 | 38,500 | 5-9 | 29,500 | 4-8 | 24,000 | 2-3 | 13,200 |
| 21..... | 23-2 | 126,000 | 12-8 | 66,100 | 7-6 | 38,000 | 5-9 | 29,500 | 4-7 | 23,500 | 2-2 | 12,800 |
| 22..... | 22-8 | 124,000 | 12-7 | 65,500 | 7-4 | 37,000 | 5-8 | 29,000 | 4-4 | 22,100 | 2-1 | 12,400 |
| 23..... | 22-2 | 120,000 | 12-6 | 65,000 | 7-1 | 35,500 | 5-8 | 29,000 | 4-5 | 22,600 | 2-0 | 12,000 |
| 24..... | 21-6 | 116,000 | 12-6 | 65,000 | 6-9 | 34,500 | 5-7 | 28,500 | 4-4 | 22,100 | 1-9 | 11,600 |
| 25..... | 21-3 | 115,000 | 12-5 | 64,400 | 6-7 | 33,500 | 5-7 | 28,500 | 4-2 | 21,200 | 1-8 | 11,300 |
| 26..... | 20-0 | 107,000 | 12-4 | 63,900 | 6-6 | 33,000 | 5-6 | 28,000 | 4-0 | 20,200 | 1-8 | 11,300 |
| 27..... | ..... | 104,000 | 12-4 | 63,900 | 6-6 | 33,000 | 5-5 | 27,500 | 3-9 | 19,800 | 1-7 | 10,900 |
| 28..... | ..... | 101,000 | 12-2 | 62,800 | 6-5 | 32,500 | 5-4 | 27,000 | 3-8 | 19,400 | 1-6 | 10,600 |
| 29..... | ..... | 98,000 | 12-0 | 61,700 | 6-3 | 31,500 | 5-3 | 26,500 | 3-9 | 19,800 | 1-5 | 10,200 |
| 30..... | ..... | 95,100 | 11-7 | 60,000 | 6-3 | 31,500 | 5-2 | 26,000 | 4-0 | 20,200 | 1-4 | 9,900 |
| 31..... | ..... | 92,300 | 11-5 | 58,900 | ..... | ..... | 5-1 | 25,500 | ..... | ..... | 1-4 | 9,900 |

MONTHLY DISCHARGE of Columbia River near Castlegar, for 1914.

(Drainage area, 15,000 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | RUN-OFF. | |
|----------------|---------------------------|------------------|-----------------------------------|---------------------|
| | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January..... | 9,000 | 0-6 | 0-69 | 553,000 |
| February..... | 7,370 | 0-49 | 0-51 | 409,000 |
| March..... | 7,400 | 0-49 | 0-56 | 455,000 |
| April..... | 17,460 | 1-16 | 1-29 | 1,040,000 |
| May..... | 54,400 | 3-62 | 4-17 | 3,340,000 |
| June..... | 93,900 | 6-25 | 6-97 | 5,590,000 |
| July..... | 118,000 | 7-87 | 9-07 | 7,260,000 |
| August..... | 72,400 | 4-83 | 5-57 | 4,450,000 |
| September..... | 44,300 | 2-96 | 3-30 | 2,640,000 |
| October..... | 27,000 | 1-80 | 2-08 | 1,660,000 |
| November..... | 23,400 | 1-56 | 1-74 | 1,390,000 |
| December..... | 16,100 | 1-07 | 1-23 | 990,000 |

NOTE.—In this case the mean discharge represents the difference between the mean discharges of the Columbia near Trail and the Kootenay near Glade.

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MONTHLY DISCHARGE of Columbia River near Castlegar, for 1914—*Concluded*.

(Drainage area, 15,000 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January..... | 10,600 | 8,300 | 9,410 | 0.63 | 0.73 | 579,000 |
| February..... | 8,000 | 6,800 | 7,440 | 0.50 | 0.52 | 413,000 |
| March..... | 8,900 | 8,600 | 8,180 | 0.54 | 0.62 | 503,000 |
| April..... | 32,000 | 8,600 | 17,800 | 1.18 | 1.32 | 1,060,000 |
| May..... | 89,400 | 33,000 | 64,400 | 4.29 | 4.95 | 3,960,000 |
| June..... | 125,000 | 91,100 | 108,000 | 7.2 | 8.03 | 6,430,000 |
| July..... | 133,000 | 92,300 | 119,000 | 7.93 | 9.14 | 7,320,000 |
| August..... | 89,400 | 58,900 | 71,500 | 4.76 | 5.49 | 4,400,000 |
| September..... | 57,800 | 31,500 | 44,000 | 2.03 | 3.27 | 2,620,000 |
| October..... | 36,500 | 25,500 | 30,600 | 2.04 | 2.35 | 1,880,000 |
| November..... | 26,000 | 19,400 | 23,600 | 1.57 | 1.75 | 1,400,000 |
| December..... | 20,700 | 9,900 | 15,000 | 1.00 | 1.15 | 922,000 |

COLUMBIA RIVER NEAR REVELSTOKE (3007).

Location.—S.E. $\frac{1}{4}$ section 33, township 23, range 2, west 6th, meridian, above the mouth of Illecillewaet river on downstream side of highway bridge near Revelstoke.

Records Available.—1912-13-14, during open season.

Climatic Conditions.—In 1914 the precipitation was 40.5 inches, of which about 10 feet was snowfall. The summers are hot, with considerable rainfall. The winters are fairly cold, as low as -20°F . some seasons, with very heavy snowfall. Frazil ice forms in large quantities.

Gauge.—Chain gauge used and read daily during open season by Mr. J. H. Jones.

Channel.—About 1,000 feet wide, controlled by a fairly permanent sandbar, 500 yards below. Shift in 1913 apparently caused by the building of a break-water at the control.

Discharge Measurements.—Sixteen well distributed measurements taken during 1911-12-13-14. Miscellaneous ice-cover metering taken on February 27, 1912. Discharge, 4,460 c.f.s.

Accuracy.—Accurate gauge reading, fair conditions for metering. These results are considered to be within 3 per cent.

DISCHARGE MEASUREMENTS of Columbia River near Revelstoke, B.C., for 1914.

| Date. | Hydrographer | Meter No. | Width | Area of Section. | Mean Velocity | Gauge Height | Discharge |
|---------|-------------------|-----------|-------|------------------|---------------|--------------|-----------|
| | | | Feet | Sq. ft. | Ft. per sec. | Feet | Sec. ft. |
| June 25 | J. A. Elliott | 1909 | 846 | 11,500 | 6.38 | 13.2 | 73,000 |
| May 20 | " | 1672 | 835 | 8,190 | 5.93 | 11.6 | 48,500 |
| Sept 7 | J. A. E. C. E. R. | 1927 | 825 | 7,940 | 4.75 | 9.5 | 37,700 |
| Oct. 8 | J. A. E. | 1909 | 710 | 5,750 | 3.18 | 7.0 | 18,300 |
| Nov 18 | " | 1909 | 705 | 4,210 | 2.66 | 5.1 | 11,200 |

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Revelstoke, B.C., for 1914.

| DAY. | May. | | June. | |
|---------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | ..... | Average | 11-6 | 52,700 |
| 2..... | ..... | 35,000 | 13-18 | 67,300 |
| 3..... | ..... | ..... | 15-25 | 88,700 |
| 4..... | ..... | ..... | 16-35 | 100,000 |
| 5..... | ..... | ..... | 16-05 | 97,500 |
| 6..... | ..... | ..... | 15-3 | 89,300 |
| 7..... | ..... | ..... | 14-1 | 76,500 |
| 8..... | ..... | ..... | 13-3 | 68,000 |
| 9..... | ..... | ..... | 12-8 | 63,200 |
| 10..... | ..... | ..... | 12-9 | 64,700 |
| 11..... | ..... | ..... | 13-3 | 68,000 |
| 12..... | ..... | ..... | 13-9 | 74,000 |
| 13..... | ..... | ..... | 15-2 | 88,200 |
| 14..... | ..... | ..... | 16-2 | 98,600 |
| 15..... | ..... | ..... | 16-9 | 106,000 |
| 16..... | ..... | ..... | 17-8 | 116,000 |
| 17..... | ..... | ..... | 18-8 | 129,000 |
| 18..... | ..... | ..... | 19-0 | 132,000 |
| 19..... | ..... | ..... | 19-0 | 132,000 |
| 20..... | 11-8 | 54,000 | 17-4 | 113,000 |
| 21..... | 12-2 | 56,500 | 16-1 | 98,200 |
| 22..... | 12-4 | 59,400 | 15-6 | 90,900 |
| 23..... | 12-9 | 64,600 | 14-6 | 81,300 |
| 24..... | 13-6 | 71,500 | 14-1 | 76,800 |
| 25..... | 13-8 | 73,500 | 14-1 | 77,000 |
| 26..... | 13-5 | 70,500 | 14-9 | 85,200 |
| 27..... | 12-8 | 63,700 | 15-4 | 90,500 |
| 28..... | 12-2 | 58,100 | 15-4 | 90,800 |
| 29..... | 11-4 | 51,000 | 15-7 | 93,200 |
| 30..... | 10-8 | 46,400 | 16-1 | 97,900 |
| 31..... | 10-96 | 47,400 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Revelstoke, B.C., for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|---------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 16.1 | 97,900 | 14.7 | 82,700 | 10.5 | 43,600 | 8.9 | 31,300 | 6.8 | 18,200 | 5.5 | 12,400 |
| 2 | 17.1 | 109,000 | 15.0 | 86,000 | 10.8 | 46,000 | 8.6 | 29,200 | 6.9 | 18,700 | 5.4 | 12,000 |
| 3 | 18.1 | 121,000 | 15.0 | 86,000 | 10.7 | 45,200 | 8.3 | 27,100 | 7.0 | 19,200 | 5.3 | 11,600 |
| 4 | 19.1 | 133,000 | 15.0 | 86,000 | 10.5 | 43,600 | 7.9 | 24,400 | 6.9 | 18,700 | 5.1 | 10,800 |
| 5 | 19.2 | 134,000 | 15.0 | 86,000 | 10.4 | 42,800 | 7.6 | 22,600 | 6.8 | 18,200 | 5.0 | 10,500 |
| 6 | 19.0 | 132,000 | 14.4 | 79,500 | 9.8 | 38,000 | 7.4 | 21,400 | 6.6 | 17,200 | 4.9 | 10,200 |
| 7 | 18.2 | 122,000 | 14.2 | 77,500 | 9.7 | 37,200 | 7.2 | 20,200 | 6.4 | 16,200 | 4.8 | 9,900 |
| 8 | 18.0 | 120,000 | 14.4 | 79,500 | 10.6 | 44,400 | 7.2 | 20,200 | 6.3 | 15,700 | 4.8 | 9,900 |
| 9 | 17.2 | 110,000 | 13.4 | 69,500 | 10.0 | 39,600 | 7.3 | 20,800 | 6.3 | 15,700 | | |
| 10 | 17.4 | 112,000 | 12.3 | 59,000 | 9.7 | 37,200 | 7.2 | 20,200 | 6.2 | 15,200 | | |
| 11 | 18.6 | 127,000 | 11.9 | 55,400 | 9.3 | 34,100 | 7.1 | 19,700 | 6.3 | 15,700 | | |
| 12 | 18.4 | 124,000 | 11.5 | 51,800 | 8.6 | 29,200 | 6.9 | 18,700 | 6.1 | 14,800 | | Average 8,000 |
| 13 | 18.2 | 122,000 | 11.7 | 53,600 | 8.2 | 26,400 | 6.8 | 18,200 | 6.0 | 14,400 | | |
| 14 | 20.7 | 146,000 | 12.4 | 59,900 | 8.1 | 25,700 | 6.7 | 17,700 | 5.9 | 14,000 | | |
| 15 | 19.3 | 136,000 | 12.9 | 64,700 | 7.6 | 22,600 | 6.6 | 17,200 | 5.8 | 13,600 | | |
| 16 | 18.8 | 129,000 | 12.8 | 63,700 | 6.8 | 18,200 | 7.7 | 23,200 | 5.7 | 13,200 | | |
| 17 | 16.3 | 100,000 | 12.6 | 61,700 | 7.0 | 19,200 | 7.9 | 24,400 | 5.4 | 12,000 | | |
| 18 | 16.2 | 99,000 | 12.5 | 60,800 | 7.2 | 20,200 | 7.8 | 23,800 | 5.3 | 11,600 | | |
| 19 | 16.8 | 105,000 | 12.5 | 60,800 | 8.0 | 25,000 | 7.7 | 23,200 | 5.3 | 11,600 | | |
| 20 | 16.1 | 98,000 | 12.8 | 63,700 | 7.7 | 23,200 | 7.0 | 19,200 | 5.2 | 11,200 | | |
| 21 | 15.3 | 89,300 | 13.0 | 65,700 | 7.6 | 22,600 | 6.6 | 17,200 | 5.2 | 11,200 | | |
| 22 | 14.6 | 81,600 | 12.9 | 64,700 | 7.5 | 22,000 | 6.4 | 16,200 | 5.2 | 11,200 | | |
| 23 | 14.2 | 77,500 | 12.6 | 61,700 | 7.4 | 21,400 | 6.4 | 16,200 | 5.3 | 11,600 | | |
| 24 | 14.1 | 76,500 | 12.0 | 56,300 | 7.5 | 22,000 | 6.3 | 15,700 | 5.4 | 12,000 | | |
| 25 | 14.2 | 77,500 | 11.5 | 51,800 | 7.7 | 23,200 | 6.2 | 15,200 | 5.5 | 12,400 | | |
| 26 | 13.7 | 72,500 | 11.3 | 50,200 | 8.0 | 25,000 | 6.1 | 14,800 | 5.7 | 13,200 | | |
| 27 | 13.4 | 69,500 | 11.4 | 51,000 | 9.7 | 37,200 | 6.0 | 14,400 | 5.6 | 12,800 | | |
| 28 | 13.1 | 66,600 | 11.6 | 52,700 | 9.6 | 36,400 | 5.9 | 14,000 | 5.7 | 13,200 | | |
| 29 | 12.9 | 64,700 | 11.8 | 54,500 | 9.6 | 36,400 | 5.7 | 13,200 | 5.7 | 13,200 | | |
| 30 | 13.2 | 67,500 | 10.5 | 43,600 | 9.1 | 32,700 | 6.2 | 15,200 | 5.6 | 12,800 | | |
| 31 | 13.9 | 74,500 | 10.4 | 42,800 | | | 6.8 | 18,200 | | | | |

MONTHLY DISCHARGE of Columbia River near Revelstoke, for 1914.

(Drainage area, 9,000 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET | | | | RUN-OFF | | Accuracy |
|-----------|--------------------------|----------|---------|-----------------|-----------------|------------|----------|
| | Maximum. | Minimum. | Mean. | Per Square Mile | Depth in inches | Total in | |
| | | | | | Drainage Area. | Acres-feet | |
| May | 73,500 | | 44,500 | 4.94 | 5.70 | 2,740,000 | |
| June | 132,000 | 52,700 | 90,200 | 10.0 | 11.2 | 5,370,000 | B |
| July | 116,000 | 64,700 | 103,000 | 11.4 | 13.1 | 6,300,000 | B |
| August | 86,000 | 42,800 | 66,700 | 7.41 | 2.54 | 1,100,000 | A |
| September | 46,000 | 18,200 | 31,700 | 3.52 | 3.93 | 1,804,000 | A |
| October | 31,300 | 13,200 | 19,900 | 2.21 | 2.55 | 1,250,000 | A |
| November | 19,200 | 11,200 | 14,300 | 1.59 | 1.77 | 851,000 | A |
| December | 12,400 | | 8,750 | 0.97 | 1.12 | 508,000 | |

FOUR-MILE CREEK BELOW HEWITT MILL (3027).

Location.—At bridge about 3 miles from mouth, near Silverton, and about a mile below Hewitt Mill. Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Summers, hot with light rainfall after June. Winters, not very severe, with moderate snowfall. The creek does not stay frozen for more than a few days at a time. Frazil and anchor ice may form at times.

Gauge.—Vertical staff, enamel, read daily by Mr. Geo. Stilwell, superintendent at Hewitt mill.

Channel.—Swift water, with rocky bed. Apparently permanent.

Discharge Measurements.—Seven measurements were made in 1914.

Accuracy.—The measurements may not be very accurate. Daily gauge readings are obtained. Accuracy not guaranteed below gauge height, 0.5. Accuracy above 0.5 and below 1.5, 10 per cent. Accuracy above 1.5, 20 per cent.

General.—Four-mile creek is a small creek flowing from the east into Slocan lake, near Silverton. It drains a mountainous country, abundant in mineral wealth, and the creek is used for mining purposes by Standard, Hewitt, and Van Roi mines.

DISCHARGE MEASUREMENTS of Four Mile Creek, Silverton, below Hewitt Mill, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | | Area of Section. | | Mean Velocity. | | Gauge Height. | | Discharge. | |
|----------|-----------------------|-----------|--------|---------|------------------|-------|------------------|--|---------------|--|------------|--|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. | | | | | |
| April 19 | C. E. W., D. O' B. G. | 1,048 | 26.5 | 43.0 | 3.97 | 0.85 | 171 | | | | | |
| May 12 | J. A. E., G. K. B. | 1,672 | 33.5 | 63.5 | 4.69 | 1.20 | 298 | | | | | |
| June 11 | G. K. B., C. E. R. | 1,927 | 30.0 | 57.2 | 4.81 | 1.15 | 275 | | | | | |
| June 18 | G. K. B. | 1,927 | 37.0 | 95.6 | 5.01 | 2.10 | 479 ¹ | | | | | |
| July 9 | D. O. B. G., J. A. E. | 1,929 | 28.0 | 66.0 | 4.30 | 1.25 | 283 | | | | | |
| Aug. 18 | D. O' B. G., J. A. E. | 1,929 | 24.0 | 33.1 | 2.64 | 0.5 | 87.6 | | | | | |
| Nov. 3 | J. A. E., G. K. B. | 1,909 | 22.0 | 32.5 | 3.12 | 0.5 | 101 | | | | | |

¹Meter out of order.

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DAILY GAUGE HEIGHT AND DISCHARGE of Four-Mile River, below Hewitt Mill, for 1914.

| DAY. | May. | | June. | |
|------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0.9 | 190 | 1.65 | 436 |
| 2 | 1.1 | 150 | 2.10 | 612 |
| 3 | 1.25 | 296 | 2.45 | 758 |
| 4 | 1.2 | 280 | 2.40 | 737 |
| 5 | 1.1 | 250 | 1.85 | 514 |
| 6 | 1.05 | 235 | 1.70 | 455 |
| 7 | 1.05 | 235 | 1.50 | 381 |
| 8 | 1.05 | 235 | 1.40 | 346 |
| 9 | 1.17 | 271 | 1.35 | 329 |
| 10 | 1.2 | 280 | 1.35 | 329 |
| 11 | 1.2 | 280 | 1.35 | 329 |
| 12 | 1.2 | 280 | 1.45 | 364 |
| 13 | 1.28 | 306 | 1.60 | 417 |
| 14 | 1.37 | 336 | 1.95 | 553 |
| 15 | 1.7 | 455 | 2.05 | 592 |
| 16 | 1.8 | 494 | 2.25 | 674 |
| 17 | 1.65 | 456 | 2.4 | 737 |
| 18 | 1.55 | 399 | 2.4 | 737 |
| 19 | 1.5 | 381 | 2.47 | 767 |
| 20 | 1.45 | 364 | 2.0 | 572 |
| 21 | 1.45 | 364 | 1.60 | 417 |
| 22 | 1.45 | 364 | 1.40 | 346 |
| 23 | 1.52 | 388 | 1.30 | 312 |
| 24 | 1.62 | 425 | 1.30 | 312 |
| 25 | 1.65 | 436 | 1.30 | 312 |
| 26 | 1.52 | 388 | 1.40 | 346 |
| 27 | 1.45 | 364 | 1.50 | 381 |
| 28 | 1.32 | 319 | 1.5 | 381 |
| 29 | 1.25 | 296 | 1.55 | 399 |
| 30 | 1.32 | 319 | 1.6 | 417 |
| 31 | 1.48 | 374 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Four-Mile River, below Hewitt Mill, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-65 | 436 | 0-70 | 140 | 0-30 | 65 | 0-55 | 108 | 0-62 | 122 | 0-10 | 41 |
| 2 | 1-7 | 455 | 0-70 | 140 | 0-30 | 65 | 0-50 | 98 | 0-67 | 133 | 0-15 | 46 |
| 3 | 1-7 | 455 | 0-70 | 140 | 0-30 | 65 | 0-50 | 98 | 0-65 | 129 | 0-15 | 46 |
| 4 | 1-7 | 455 | 0-70 | 140 | 0-30 | 65 | 0-45 | 89 | 0-55 | 108 | 0-10 | 41 |
| 5 | 1-6 | 417 | 0-70 | 140 | 0-25 | 59 | 0-45 | 89 | 0-50 | 98 | 0-10 | 41 |
| 6 | 1-5 | 381 | 0-70 | 140 | 0-32 | 68 | 0-45 | 89 | 0-45 | 89 | 0-10 | 41 |
| 7 | 1-4 | 346 | 0-80 | 165 | 0-40 | 80 | 0-45 | 89 | 0-45 | 89 | 0-10 | 41 |
| 8 | 1-4 | 346 | 0-70 | 140 | 0-40 | 80 | 0-40 | 80 | 0-45 | 89 | 0-10 | 41 |
| 9 | 1-3 | 312 | 0-60 | 118 | 0-40 | 80 | 0-40 | 80 | 0-45 | 89 | 0-10 | 41 |
| 10 | 1-25 | 296 | 0-60 | 118 | 0-37 | 76 | 0-40 | 80 | 0-45 | 89 | 0-05 | 36 |
| 11 | 1-2 | 280 | 0-60 | 118 | 0-35 | 73 | 0-40 | 80 | 0-40 | 80 | 0-05 | 36 |
| 12 | 1-2 | 280 | 0-55 | 108 | 0-35 | 73 | 0-40 | 80 | 0-40 | 80 | 0-05 | 36 |
| 13 | 1-25 | 296 | 0-50 | 98 | 0-35 | 73 | 0-35 | 73 | 0-40 | 80 | 0-05 | 36 |
| 14 | 1-3 | 312 | 0-50 | 98 | 0-38 | 77 | 0-35 | 73 | 0-45 | 89 | 0-02 | 34 |
| 15 | 1-25 | 296 | 0-50 | 98 | 0-40 | 80 | 0-30 | 65 | 0-30 | 65 | 0-05 | 36 |
| 16 | 1-22 | 286 | 0-50 | 98 | 0-50 | 98 | 0-30 | 65 | 0-30 | 65 | 0-05 | 36 |
| 17 | 1-07 | 241 | 0-55 | 108 | 0-55 | 108 | 0-55 | 108 | 0-25 | 59 | 0-05 | 36 |
| 18 | 1-00 | 220 | 0-50 | 98 | 0-65 | 129 | 0-55 | 108 | 0-25 | 59 | 0-00 | 32 |
| 19 | 1-00 | 220 | 0-45 | 89 | 0-65 | 129 | 0-55 | 108 | 0-25 | 59 | 0-00 | 32 |
| 20 | 1-00 | 220 | 0-45 | 89 | 0-60 | 118 | 0-55 | 108 | 0-25 | 59 | 0-00 | 32 |
| 21 | 0-87 | 183 | 0-42 | 84 | 0-55 | 108 | 0-52 | 102 | 0-25 | 59 | -0-05 | 28 |
| 22 | 0-85 | 177 | 0-40 | 80 | 0-50 | 98 | 0-40 | 80 | 0-25 | 59 | -0-10 | 25 |
| 23 | 0-80 | 165 | 0-40 | 80 | 0-50 | 98 | 0-40 | 80 | 0-25 | 59 | -0-18 | 21 |
| 24 | 0-80 | 165 | 0-40 | 80 | 0-50 | 98 | 0-40 | 80 | 0-25 | 59 | -0-20 | 20 |
| 25 | 0-80 | 165 | 0-35 | 73 | 0-50 | 98 | 0-40 | 80 | 0-20 | 52 | -0-10 | 25 |
| 26 | 0-80 | 165 | 0-35 | 73 | 0-50 | 98 | 0-40 | 80 | 0-25 | 59 | -0-00 | 32 |
| 27 | 0-80 | 165 | 0-30 | 65 | 0-68 | 136 | 0-35 | 73 | 0-25 | 59 | -0-05 | 36 |
| 28 | 0-75 | 152 | 0-30 | 65 | 0-60 | 118 | 0-35 | 73 | 0-25 | 59 | -0-05 | 36 |
| 29 | 0-75 | 152 | 0-35 | 73 | 0-60 | 118 | 0-35 | 73 | 0-25 | 59 | -0-00 | 32 |
| 30 | 0-70 | 140 | 0-35 | 73 | 0-55 | 108 | 0-46 | 91 | 0-20 | 52 | 0-00 | 32 |
| 31 | 0-70 | 140 | 0-30 | 65 | | | 0-50 | 98 | | | 0-00 | 32 |

MONTHLY DISCHARGE of Four-Mile Creek near Silverton, for 1914.

(Drainage area, 41 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| May | 494 | 190 | 328 | 8-00 | 9-22 | 10,200 | D |
| June | 758 | 312 | 475 | 11-6 | 12-9 | 28,300 | D |
| July | 455 | 140 | 268 | 6-54 | 7-54 | 16,500 | D |
| August | 165 | 65 | 103 | 2-51 | 2-89 | 6,300 | B |
| September | 136 | 59 | 91-3 | 2-23 | 2-50 | 5,430 | B |
| October | 108 | 65 | 86-3 | 2-10 | 2-42 | 5,360 | B |
| November | 133 | 52 | 76-9 | 1-88 | 2-10 | 4,580 | B |
| December | 46 | 20 | 34-8 | 0-85 | 0-98 | 2,140 | B |

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FOUR MILE CREEK ABOVE HEWITT INTAKE (3028).

Location.—Immediately above Hewitt intake, about 5 miles from Silverton, Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—Similar to Four-mile creek below Hewitt mill.

Gauge.—Vertical staff, enamel, read daily by Mr. P. Harding, of Van Roi mill.

Channel.—Water smooth and swift, controlled by Hewitt diversion dam.

Discharge Measurements.—Five measurements were made in 1914, by wading.

Accuracy.—No high-water measurements were made. The gauge readings have been somewhat intermittent. The results may not be closer than 20 per cent.

General.—Granite creek flows in below this station and above the station located below Hewitt mill.

DISCHARGE MEASUREMENTS of Four Mile Creek near Silverton, above Hewitt Intake, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------|--------------------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 19 | G. E. W., D. O'B. G..... | 1048 | 38.5 | 62.7 | 1.27 | 1.05 | 80.1 |
| June 11..... | G. K. B., C. E. R..... | 1927 | 28.2 | 55.0 | 3.55 | 1.52 | 195.0 ¹ |
| July 9..... | J. A. E., D. O'B. G..... | 1929 | 30.5 | 57.8 | 3.56 | 1.58 | 206.0 |
| Aug. 18..... | D. O'B. G..... | 1929 | 26 | 26.9 | 1.86 | 0.8 | 50.1 |
| Nov. 3..... | J. A. E., G. K. B..... | 1909 | 25 | 22.6 | 2.09 | 0.8 | 47.4 |

¹Different section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Four Mile Creek above Hewitt Intake near Silverton, for 1914.

| Day. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0-9 | 60-0 | 2-05 | 348-0 |
| 2 | | | 1-2 | 110-0 | 2-3 | 430-0 |
| 3 | | | 1-55 | 198-0 | 2-0 | 332-0 |
| 4 | | | 1-7 | 241-0 | 1-9 | 301-0 |
| 5 | | | 1-65 | 226-0 | 1-8 | 271-0 |
| 6 | | | 1-6 | 212-0 | 1-6 | 212-0 |
| 7 | | | 1-55 | 198-0 | 1-6 | 212-0 |
| 8 | | | 1-5 | 183-0 | 1-6 | 212-0 |
| 9 | | | 1-85 | 226-0 | 1-5 | 183-0 |
| 10 | | | 1-7 | 241-0 | 1-7 | 241-0 |
| 11 | | | 1-6 | 212-0 | 1-7 | 241-0 |
| 12 | | | 1-5 | 183-0 | 1-8 | 271-0 |
| 13 | | | 1-5 | 183-0 | 1-9 | 301-0 |
| 14 | | | 1-8 | 271-0 | 1-9 | 301-0 |
| 15 | | | 2-0 | 332-0 | 2-1 | 365-0 |
| 16 | | | 2-15 | 381-0 | 2-2 | 397-0 |
| 17 | | | 2-1 | 365-0 | 2-3 | 430-0 |
| 18 | | | 1-9 | 301-0 | 2-2 | 397-0 |
| 19 | | | 1-7 | 241-0 | 2-0 | 332-0 |
| 20 | | | 1-7 | 241-0 | 2-2 | 397-0 |
| 21 | | | 1-8 | 271-0 | 2-0 | 332-0 |
| 22 | | | 1-9 | 301-0 | 1-9 | 301-0 |
| 23 | | | 1-9 | 301-0 | 1-7 | 241-0 |
| 24 | | | 0-7 | 39-5 | 1-6 | 212-0 |
| 25 | | | 0-7 | 39-5 | 1-6 | 212-0 |
| 26 | 0-6 | 31-7 | 1-45 | 170-0 | 1-5 | 183-0 |
| 27 | 0-7 | 39-5 | 1-4 | 157-0 | 1-5 | 183-0 |
| 28 | 0-6 | 31-7 | 1-5 | 183-0 | 1-4 | 157-0 |
| 29 | 0-8 | 48-0 | 1-6 | 212-0 | 1-5 | 183-0 |
| 30 | 0-8 | 48-0 | 1-8 | 271-0 | 1-6 | 212-0 |
| 31 | | | 1-9 | 301-0 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Four Mile Creek above Hewitt Intake near Silverton, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.5 | 183-0 | 1.0 | 71.5 | 0.80 | 48.0 | 0.82 | 50.4 | 0.8 | 48.0 | 0.5 | 26.2 |
| 2 | | 183-0 | 1.0 | 71.5 | 0.75 | 43.8 | 0.82 | 50.4 | 0.9 | 60.0 | 0.48 | 25.2 |
| 3 | | 183-0 | 1.0 | 71.5 | 0.75 | 43.8 | 0.80 | 48.0 | 0.82 | 50.4 | 0.45 | 23.7 |
| 4 | | 183-0 | 1.0 | 71.5 | 0.75 | 43.8 | 0.78 | 46.3 | 0.8 | 48.0 | 0.4 | 21.2 |
| 5 | | 183-0 | 0.9 | 60.0 | 0.75 | 43.8 | 0.78 | 46.3 | 0.85 | 54.0 | 0.4 | 21.2 |
| 6 | | 183-0 | 0.9 | 60.0 | 0.55 | 29.0 | 0.72 | 41.2 | 0.82 | 50.4 | 0.4 | 21.2 |
| 7 | | 183-0 | 1.0 | 71.5 | 0.50 | 26.2 | 0.69 | 37.9 | 0.78 | 46.3 | 0.5 | 26.2 |
| 8 | | 183-0 | 1.0 | 71.5 | 0.60 | 31.7 | 0.70 | 39.5 | 0.7 | 39.5 | 0.5 | 26.2 |
| 9 | 1.5 | 183-0 | 1.0 | 71.5 | 0.62 | 33.3 | 0.68 | 37.9 | 0.72 | 41.2 | 0.5 | 26.2 |
| 10 | 1.45 | 170.0 | 1.0 | 71.5 | 0.62 | 33.3 | 0.68 | 37.9 | 0.7 | 39.5 | 0.5 | 26.2 |
| 11 | 1.45 | 170.0 | | 70.0 | 0.68 | 37.9 | 0.7 | 39.5 | 0.7 | 39.5 | 0.45 | 23.7 |
| 12 | 1.6 | 212.0 | | 65.0 | 0.68 | 37.9 | 0.68 | 37.9 | 0.7 | 39.5 | 0.45 | 23.7 |
| 13 | 1.65 | 226.0 | | 60.0 | 0.68 | 37.9 | 0.65 | 35.6 | 0.68 | 37.9 | Ice | 20.0 |
| 14 | 1.65 | 226.0 | | 60.0 | 0.68 | 37.9 | 0.62 | 33.3 | 0.65 | 35.6 | | 18.0 |
| 15 | 1.65 | 226.0 | | 60.0 | 0.68 | 37.9 | 0.6 | 31.7 | 0.62 | 33.3 | | 17.0 |
| 16 | 1.45 | 170.0 | | 55.0 | 0.60 | 31.7 | 0.6 | 31.7 | 0.57 | 30.0 | | 16.0 |
| 17 | 1.25 | 121.0 | | 50.0 | 0.68 | 37.9 | 0.82 | 50.4 | 0.60 | 31.7 | | 15.0 |
| 18 | 1.25 | 121.0 | 0.8 | 48.0 | 0.78 | 46.3 | 0.88 | 57.6 | 0.60 | 31.7 | | 15.0 |
| 19 | 1.35 | 144.0 | 0.9 | 60.0 | 0.97 | 68.0 | 0.85 | 54.0 | 0.60 | 31.7 | | 15.0 |
| 20 | 1.30 | 132.0 | 0.95 | 65.8 | 0.98 | 69.2 | 0.78 | 46.3 | 0.58 | 30.6 | | 16.0 |
| 21 | 1.15 | 109.0 | 0.9 | 60.0 | 0.85 | 54.0 | 0.7 | 39.5 | 0.60 | 31.7 | | 16.0 |
| 22 | 1.15 | 109.0 | 0.95 | 65.8 | 0.88 | 57.6 | 0.7 | 39.5 | 0.58 | 30.6 | 0.3 | 16.8 |
| 23 | 1.20 | 110.0 | 0.9 | 60.0 | 0.78 | 46.3 | 0.68 | 37.9 | 0.55 | 29.0 | 0.3 | 16.8 |
| 24 | 1.10 | 90.0 | 1.0 | 71.5 | 0.80 | 48.0 | 0.65 | 35.6 | 0.52 | 27.3 | 0.3 | 16.8 |
| 25 | 1.10 | 90.0 | 1.0 | 71.5 | 0.80 | 48.0 | 0.65 | 35.6 | 0.5 | 26.2 | 0.25 | 13.6 |
| 26 | 1.1 | 90.0 | 0.85 | 54.0 | 0.85 | 54.0 | 0.65 | 35.6 | 0.55 | 29.0 | 0.25 | 13.6 |
| 27 | 1.1 | 90.0 | 0.85 | 54.0 | 0.95 | 65.8 | 0.62 | 33.3 | 0.52 | 27.3 | 0.25 | 13.6 |
| 28 | 1.1 | 90.0 | 0.85 | 54.0 | 0.95 | 65.8 | 0.6 | 31.7 | 0.5 | 26.2 | 0.25 | 13.6 |
| 29 | 1.1 | 90.0 | 0.85 | 54.0 | 0.95 | 65.8 | 0.6 | 31.7 | 0.5 | 26.2 | 0.25 | 13.6 |
| 30 | 1.1 | 90.0 | 0.85 | 54.0 | 0.88 | 57.6 | 0.65 | 35.6 | 0.5 | 26.2 | 0.25 | 13.6 |
| 31 | 1.0 | 71.5 | 0.80 | 48.0 | | | 0.70 | 39.5 | | | 0.20 | 12.5 |

MONTHLY DISCHARGE of Four Mile Creek near Silverton, for 1914.

(Drainage area, 30 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|--------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet | |
| | | | | | | | |
| May | 381 | 60 | 234 | 7.80 | 8.99 | 14,400 | D |
| June | 430 | 157 | 290 | 9.66 | 10.8 | 17,300 | D |
| July | 226 | 71.5 | 148 | 4.93 | 5.68 | 9,100 | |
| August | 71.5 | 48 | 62.4 | 2.08 | 2.40 | 3,840 | |
| September | 69.2 | 26.2 | 46.1 | 1.54 | 1.72 | 2,740 | C |
| October | 57.6 | 31.7 | 40.3 | 1.34 | 1.54 | 2,480 | C |
| November | 60.0 | 26.2 | 36.6 | 1.22 | 1.30 | 2,180 | C |
| December | 26.2 | 12.5 | 18.8 | 0.63 | 0.73 | 1,160 | |

GOAT RIVER NEAR ERICKSON (3031).

Location.—Immediately above bridge near Erickson, and 5 miles from Creston. Nelson district.

Records Available.—May to November, 1914.

Climatic Conditions.—Similar to Nelson (see Kootenay river near Nelson), being affected by Kootenay lake, only a few miles distant. The river generally freezes over, however, for two or three weeks at a time, but seldom for the whole winter. Frazil ice may be expected.

Gauge.—Vertical staff gauge, located immediately above head of canyon, 20 yards from Canyon Siding station, on C.P.R. The control is permanent.

Channel.—At the gauge, permanent; below measuring section, shifting.

Discharge Measurements.—Seven measurements were made in 1914 from the highway bridge below the canyon, one-quarter mile from Erickson. This section is temporary. One measurement was made on December 21, under ice conditions, and a discharge of 261 c.f.s. was obtained.

General.—Goat river is a large stream discharging into Kootenay river immediately above Kootenay lake. The drainage area is about 275 square miles of mountainous country. There are however, no high peaks, and it is not probable that the stream is glacial fed. During August the river may get very low; in fact the discharge was lower at the end of August than at the end of December, 1914.

The canyon near Erickson affords a good power, which will probably be harnessed in the future. A head of at least 100 feet may be obtained, and the low flow is probably in the neighborhood of 100 c.f.s.

Accuracy.—Daily gauge readings are obtained. The gauge control is permanent. The measurements are fair, and the gauge-height discharge curve is very good. Accuracy, 5 per cent.

DISCHARGE MEASUREMENTS of Goat River near Erickson, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|------------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-feet. |
| 1914. | | | | | | | |
| May 8..... | C. E. R., G. K. B..... | 1672 | 99 | 549 | 4.55 | 3.9 | 2,500 |
| May 28..... | J. A. Elliott..... | 1909 | 99 | 589 | 5.00 | 3.5 | 2,940 |
| June 18..... | C. E. R..... | 1672 | 103 | 711 | 6.02 | 4.95 | 4,280 |
| July 21..... | D. O'B. G..... | 1929 | 87 | 431 | 1.7 | 0.00 | 735 |
| Aug. 4..... | do..... | 1929 | 79 | 367 | 0.95 | -1.10 | 348 |
| Oct. 18..... | do..... | 1929 | 96 | 394 | 1.26 | -0.69 | 498 |
| Dec. 21..... | J. A. E., C. B. C..... | 1909 | 32 | 22.9 | 1.14 | -1.20 | 251 ¹ |

¹Ice conditions.

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Goat River near Erickson, B.C.,
for 1914.

| DAY. | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 4.70 | 3,980 |
| 2..... | | | 5.50 | 4,760 |
| 3..... | | | 6.50 | 5,780 |
| 4..... | | | 6.20 | 5,460 |
| 5..... | | | 4.85 | 4,130 |
| 6..... | | | 4.10 | 3,440 |
| 7..... | 3.0 | 2,530 | 3.45 | 2,880 |
| 8..... | 3.0 | 2,530 | 3.00 | 2,530 |
| 9..... | | 3,080 | 2.60 | 2,240 |
| 10..... | 4.4 | 3,710 | 2.20 | 1,970 |
| 11..... | | 3,530 | 2.25 | 2,200 |
| 12..... | 4.1 | 3,440 | 3.05 | 2,570 |
| 13..... | 4.3 | 3,620 | 3.80 | 3,170 |
| 14..... | 5.0 | 4,280 | 4.45 | 3,760 |
| 15..... | 6.5 | 5,780 | | 3,589 |
| 16..... | 6.40 | 5,670 | 5.00 | 4,280 |
| 17..... | 5.90 | 5,160 | 4.80 | 4,080 |
| 18..... | 5.60 | 4,860 | 5.15 | 4,430 |
| 19..... | 5.60 | 4,860 | 4.65 | 3,930 |
| 20..... | 4.95 | 4,230 | 3.95 | 3,300 |
| 21..... | 4.75 | 4,030 | 2.80 | 2,380 |
| 22..... | 5.20 | 4,470 | 2.70 | 2,310 |
| 23..... | 5.20 | 4,470 | 2.05 | 1,860 |
| 24..... | 5.35 | 4,610 | 1.85 | 1,730 |
| 25..... | 5.15 | 4,430 | 2.80 | 2,380 |
| 26..... | 4.45 | 3,760 | 3.55 | 2,960 |
| 27..... | 3.95 | 3,300 | 3.10 | 2,610 |
| 28..... | 3.50 | 2,920 | 1.80 | 1,380 |
| 29..... | 3.00 | 2,530 | 2.60 | 2,240 |
| 30..... | 3.15 | 2,650 | 2.85 | 2,410 |
| 31..... | 3.95 | 3,300 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Goat River near Erickson, B.C.,
for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 2.70 | 2,310 | -0.95 | 400 | -1.60 | 205 | -1.10 | 355 | 0.10 | 785 | -0.8 | 445 |
| 2. | 2.65 | 2,270 | -1.00 | 385 | -1.60 | 205 | -1.10 | 355 | 0.40 | 930 | -0.85 | 430 |
| 3. | 2.70 | 2,310 | -1.10 | 355 | -1.60 | 205 | -1.00 | 385 | 1.30 | 1,410 | -0.85 | 430 |
| 4. | 2.70 | 2,310 | -1.10 | 355 | -1.60 | 205 | -1.15 | 340 | 1.30 | 1,410 | -0.80 | 445 |
| 5. | 2.25 | 2,000 | -1.10 | 355 | -1.60 | 205 | -1.10 | 355 | 1.45 | 1,490 | -0.80 | 445 |
| 6. | 1.95 | 1,800 | -1.10 | 355 | -1.60 | 205 | -1.15 | 340 | 1.90 | 1,760 | -0.90 | 415 |
| 7. | 1.65 | 1,610 | -1.20 | 325 | -1.60 | 205 | -1.10 | 355 | 1.50 | 1,520 | -0.90 | 415 |
| 8. | 1.55 | 1,560 | -1.20 | 325 | -1.60 | 205 | -1.10 | 355 | 1.9 | 1,760 | -0.90 | 415 |
| 9. | 1.40 | 1,460 | -1.20 | 325 | -1.50 | 235 | -1.10 | 355 | 1.75 | 1,670 | -0.90 | 415 |
| 10. | 1.10 | 1,300 | -1.20 | 325 | -1.50 | 235 | -1.08 | 361 | 1.45 | 1,490 | -0.90 | 415 |
| 11. | 1.05 | 1,270 | -1.20 | 325 | -1.50 | 235 | -1.05 | 370 | 1.1 | 1,300 | -0.90 | 415 |
| 12. | 0.75 | 1,100 | -1.20 | 325 | -1.50 | 235 | -1.00 | 385 | 0.8 | 1,130 | -1.00 | 385 |
| 13. | 1.00 | 1,240 | -1.20 | 325 | -1.50 | 235 | -1.00 | 385 | 0.35 | 900 | ice | 385 |
| 14. | 1.30 | 1,410 | -1.20 | 325 | -1.40 | 265 | -1.00 | 385 | 0.05 | 765 | ..... | 385 |
| 15. | 1.15 | 1,330 | -1.20 | 325 | -1.35 | 280 | -0.90 | 415 | 0.0 | 745 | ..... | 385 |
| 16. | 0.80 | 1,130 | -1.20 | 325 | -1.30 | 295 | -0.70 | 480 | -0.05 | 725 | ..... | 385 |
| 17. | 0.50 | 980 | -1.15 | 340 | -1.20 | 325 | -0.55 | 530 | -0.05 | 725 | ..... | 385 |
| 18. | 0.35 | 900 | -1.30 | 295 | -0.90 | 415 | -0.40 | 585 | -0.15 | 685 | ..... | 385 |
| 19. | 0.30 | 880 | -1.35 | 280 | -0.50 | 550 | -0.25 | 645 | -0.20 | 665 | ..... | 385 |
| 20. | 0.25 | 850 | -1.40 | 265 | -0.40 | 585 | -0.25 | 645 | -0.25 | 645 | ..... | 385 |
| 21. | 0.10 | 785 | -1.40 | 265 | -0.55 | 530 | -0.45 | 565 | -0.30 | 625 | ..... | 385 |
| 22. | -0.10 | 705 | -1.40 | 265 | -0.65 | 500 | -0.60 | 515 | -0.35 | 605 | ..... | 385 |
| 23. | -0.30 | 625 | -1.40 | 265 | -0.85 | 430 | -0.65 | 495 | -0.40 | 585 | ..... | 385 |
| 24. | -0.30 | 625 | -1.40 | 265 | -1.00 | 385 | -0.70 | 480 | -0.40 | 585 | ..... | 385 |
| 25. | -0.45 | 565 | -1.40 | 265 | -1.00 | 385 | -0.70 | 480 | -0.50 | 550 | ..... | 385 |
| 26. | -0.50 | 550 | -1.50 | 235 | -1.05 | 370 | -0.70 | 480 | -0.50 | 550 | ..... | 385 |
| 27. | -0.50 | 550 | -1.50 | 235 | -1.10 | 355 | -0.65 | 500 | -0.50 | 550 | ..... | 385 |
| 28. | -0.60 | 515 | -1.50 | 235 | -1.10 | 355 | -0.60 | 515 | -0.50 | 550 | ..... | 385 |
| 29. | ..... | 480 | -1.60 | 205 | -1.10 | 355 | -0.65 | 500 | -0.50 | 550 | ..... | 385 |
| 30. | -0.80 | 445 | -1.60 | 205 | -1.10 | 355 | -0.50 | 550 | -0.70 | 480 | ..... | 385 |
| 31. | -0.90 | 415 | -1.60 | 205 | ..... | ..... | -0.40 | 585 | ..... | ..... | ..... | 385 |

MONTHLY DISCHARGE of Goat River near Erickson, B.C., for 1914.

(Drainage area, 276 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June. | 5,780 | 1,730 | 3,200 | 11.6 | 12.9 | 190,000 | B |
| July. | 2,310 | 415 | 1,170 | 4.25 | 4.90 | 71,930 | A |
| August. | 400 | 205 | 299 | 1.08 | 1.24 | 18,400 | A |
| September. | 585 | 205 | 318 | 1.15 | 1.28 | 18,900 | A |
| October. | 645 | 340 | 440 | 1.59 | 1.83 | 27,100 | A |
| November. | 1,760 | 480 | 938 | 3.40 | 3.79 | 55,800 | A |

SESSIONAL PAPER No. 25e

KASLO CREEK (3029).

Location.—At the second highway bridge from the mouth near Kaslo, Nelson district.

Records Available.—June to December, 1914.

Climatic Conditions.—From December 1, 1913, to November 30, 1914, the precipitation at Kaslo was 24.4 inches. The summers are hot and generally dry in July and August. The winters are mild, the temperature seldom going below 0°F. The snowfall is not very heavy, and considerable rain falls in the fall and spring. The creek freezes over during cold spells, but seldom for more than two weeks at a time. Frazil ice is a possibility.

Gauge.—A chain gauge is read daily by Mr. W. F. Hurst, of Kaslo.

Channel.—The bed of the stream is full of large boulders, but apparently permanent, and the water is very fast and not at right angles to the bridge.

Discharge Measurements.—Five well distributed measurements were made in 1914.

Accuracy.—Daily gauge readings are obtained, the measurements may not be very accurate, and the gauge height discharge curve seems fairly good. The results should be well within 15 per cent.

General.—Kaslo creek is a turbulent mountain stream, about 25 miles long (two forks), flowing eastward into Kootenay lake, near Kaslo. The drainage area is about 120 square miles of country containing valuable mineral deposits. Four miles from the mouth the stream divides into what are known as North and South Forks of Kaslo creek. It is along the North Fork that the old narrow gauge railway (Great Northern) was built during the rush several years ago. The narrow gauge has long been out of commission, and, in 1914, the C.P.R. completed their line from Kaslo to Sandon and Rosebery.

Kaslo creek and its tributaries are used still for mining purposes, and the town of Kaslo has a water-power development for lighting purposes, near the mouth.

DISCHARGE MEASUREMENTS of Kaslo Creek near Kaslo, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge |
|--------------------|----------------------------|-----------|--------|------------------|----------------|---------------|-----------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| May 23 . . . | J. A. E. | 1,672 | 64 | 282 | 7.11 | 2.90 | 2,000 |
| June 17 | C. E. R. | 1,672 | 73 | 349 | 9.35 | 3.75 | 3,270 |
| July 22 | " | 1,672 | 65.9 | 191 | 3.86 | 1.95 | 737 |
| Sept. 23 | J. A. E. | 1,929 | 62.9 | 131 | 2.70 | 1.25 | 354 |
| Nov. 30 | C. E. R., G. K. B. | 1,929 | 63.0 | 96 | 2.04 | 0.85 | 195 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kaslo Creek near Kaslo, B.C.,
for 1914.

| DAY. | May. | | June. | |
|---------|-------|----------|-------|----------|
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 3-08 | 2,210 |
| 2..... | | | 3-40 | 2,710 |
| 3..... | | | 4-15 | 4,120 |
| 4..... | | | 3-82 | 3,460 |
| 5..... | | | 3-20 | 2,390 |
| 6..... | | | 2-98 | 2,060 |
| 7..... | | | 2-65 | 1,600 |
| 8..... | | | 2-50 | 1,420 |
| 9..... | | | 2-50 | 1,420 |
| 10..... | | | 2-55 | 1,480 |
| 11..... | | | 2-60 | 1,540 |
| 12..... | | | 2-75 | 1,740 |
| 13..... | | | 3-10 | 2,240 |
| 14..... | | | 3-5 | 2,870 |
| 15..... | | | 3-8 | 3,420 |
| 16..... | | | 4-0 | 3,800 |
| 17..... | | | 4-17 | 4,160 |
| 18..... | | | 4-15 | 4,120 |
| 19..... | | | 3-75 | 3,320 |
| 20..... | | | 3-35 | 2,630 |
| 21..... | | | 3-05 | 2,160 |
| 22..... | | | 2-72 | 1,700 |
| 23..... | 3-0 | 2,090 | 2-55 | 1,480 |
| 24..... | 3-0 | 2,090 | 2-5 | 1,420 |
| 25..... | 3-1 | 2,240 | 2-65 | 1,600 |
| 26..... | 2-87 | 1,900 | 2-95 | 2,020 |
| 27..... | 2-67 | 1,630 | 2-97 | 2,040 |
| 28..... | 2-55 | 1,480 | 2-95 | 2,020 |
| 29..... | 2-42 | 1,330 | 3-07 | 2,200 |
| 30..... | 2-4 | 1,310 | 3-2 | 2,390 |
| 31..... | 2-6 | 1,540 | | |

SESSIONAL PAPER No. 25c

DAILY GAUGE HEIGHT AND DISCHARGE of Kaslo Creek near Kaslo, B.C.,
for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3-32 | 2,580 | 2-0 | 880 | 1-20 | 330 | 1-28 | 370 | 1-3 | 380 | 0-83 | 185 |
| 2..... | 3-45 | 2,790 | 1-92 | 810 | 1-18 | 321 | 1-30 | 405 | 1-45 | 458 | 0-85 | 192 |
| 3..... | 3-57 | 2,960 | 1-92 | 810 | 1-15 | 307 | 1-25 | 355 | 1-4 | 430 | 0-85 | 192 |
| 4..... | 3-6 | 3,040 | 1-83 | 727 | 1-22 | 340 | 1-20 | 330 | 1-27 | 365 | 0-73 | 154 |
| 5..... | 3-3 | 2,550 | 1-65 | 585 | 1-17 | 316 | 1-10 | 285 | 1-3 | 380 | 0-75 | 160 |
| 6..... | 3-25 | 2,470 | 1-72 | 636 | 1-10 | 245 | 1-08 | 277 | 1-3 | 380 | 0-77 | 166 |
| 7..... | 3-15 | 2,320 | 1-8 | 700 | 1-20 | 330 | 1-08 | 277 | 1-25 | 355 | 0-83 | 185 |
| 8..... | 3-1 | 2,240 | 1-57 | 530 | 1-25 | 355 | 1-02 | 253 | 1-25 | 355 | 0-7 | 145 |
| 9..... | 3-05 | 2,160 | 1-45 | 458 | 1-15 | 307 | 1-00 | 245 | 1-12 | 294 | 0-7 | 145 |
| 10..... | 3-05 | 2,160 | 1-42 | 441 | 1-02 | 253 | 0-98 | 238 | 1-15 | 307 | ..... | 145 |
| 11..... | 3-05 | 2,160 | 1-42 | 441 | 1-12 | 294 | 1-07 | 273 | 1-25 | 355 | ..... | 135 |
| 12..... | 3-17 | 2,340 | 1-45 | 458 | 1-15 | 307 | 1-0 | 245 | 1-15 | 307 | ..... | 125 |
| 13..... | 3-2 | 2,390 | 1-55 | 518 | 1-02 | 253 | 1-0 | 245 | 1-2 | 330 | ..... | 120 |
| 14..... | 3-15 | 2,320 | 1-45 | 458 | 1-05 | 265 | 0-97 | 235 | 1-05 | 265 | ..... | 115 |
| 15..... | 3-05 | 2,160 | 1-52 | 498 | 1-07 | 273 | 0-93 | 220 | 1-1 | 285 | ..... | 115 |
| 16..... | 2-67 | 1,630 | 1-55 | 518 | 1-60 | 245 | 0-95 | 227 | 0-92 | 217 | ..... | 115 |
| 17..... | 2-5 | 1,420 | 1-52 | 498 | 1-05 | 265 | 1-07 | 273 | 1-07 | 273 | ..... | 115 |
| 18..... | 2-6 | 1,540 | 1-37 | 415 | 1-27 | 365 | 1-27 | 365 | 0-95 | 227 | ..... | 115 |
| 19..... | 2-6 | 1,540 | 1-40 | 430 | 1-78 | 684 | 1-33 | 395 | 0-98 | 238 | ..... | 115 |
| 20..... | 2-65 | 1,600 | 1-35 | 405 | 1-52 | 498 | 1-25 | 355 | 1-05 | 265 | ..... | 115 |
| 21..... | 2-30 | 1,200 | 1-35 | 405 | 1-35 | 405 | 1-15 | 307 | 0-97 | 235 | ..... | 115 |
| 22..... | 2-00 | 880 | 1-37 | 415 | 1-30 | 380 | 1-12 | 294 | 0-92 | 217 | ..... | 115 |
| 23..... | 1-95 | 835 | 1-32 | 390 | 1-35 | 405 | 1-05 | 265 | 0-95 | 227 | ..... | 115 |
| 24..... | 2-08 | 960 | 1-28 | 370 | 1-30 | 405 | 1-02 | 253 | 0-98 | 238 | ..... | 115 |
| 25..... | 2-05 | 930 | 1-25 | 355 | 1-48 | 474 | 1-05 | 265 | 0-95 | 227 | ..... | 115 |
| 26..... | 1-95 | 835 | 1-25 | 355 | 1-60 | 550 | 1-05 | 265 | 0-95 | 227 | ..... | 115 |
| 27..... | 2-0 | 880 | 1-25 | 355 | 1-80 | 700 | 1-05 | 265 | 0-98 | 238 | ..... | 115 |
| 28..... | 1-95 | 835 | 1-28 | 370 | 1-58 | 537 | 1-05 | 265 | 0-95 | 227 | ..... | 115 |
| 29..... | 1-9 | 790 | 1-32 | 390 | 1-42 | 441 | 1-05 | 265 | 1-02 | 253 | ..... | 115 |
| 30..... | 1-85 | 745 | 1-32 | 390 | 1-35 | 405 | 1-15 | 307 | 0-82 | 182 | ..... | 115 |
| 31..... | 1-95 | 835 | 1-25 | 355 | ..... | ..... | 1-25 | 355 | ..... | ..... | ..... | ..... |

MONTHLY DISCHARGE of Kaslo Creek near Kaslo, for 1914.

(Drainage area, 170 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | Run Off. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches Drainage area. | Total acre-feet. |
| June..... | 4,160 | 1,420 | 2,390 | 14-1 | 15-7 | 142,000 |
| July..... | 3,040 | 790 | 1,750 | 10-3 | 11-9 | 108,000 |
| August..... | 880 | 355 | 495 | 2-91 | 3-36 | 30,400 |
| September..... | 684 | 245 | 375 | 2-20 | 2-46 | 22,300 |
| October..... | 395 | 220 | 289 | 1-70 | 1-96 | 17,800 |
| November..... | 458 | 182 | 291 | 1-71 | 1-91 | 17,300 |
| December..... | 192 | 115 | 133 | 0-78 | 0-90 | 8,180 |

Accuracy "C"

KOOSKANAX CREEK NEAR NAKUSP (3022).

Location.—At bridge over canyon, 1 mile from Nakusp and about 1 mile from the mouth. Nelson district.

Records Available.—May to December, 1914.

Climatic Conditions.—The precipitation at Nakusp, from December, 1913, to November 30, 1914, was 26.8 inches. The summers are hot and fairly dry. The winters are mild. Occasionally, for a day or two, the temperature will go below zero, but the mean temperature of winter months is probably 25° to 35°F. Frazil ice may be expected for a few days at a time only.

Gauge.—A chain is located at the bridge, and read by Mr. L. H. Rawlings twice a week.

Channel.—The river is confined between perpendicular walls, 38 feet apart at the gauging and measuring section. The control is a sand and gravel bar, and seems fairly permanent.

Discharge Measurements.—Nine measurements were made in 1914.

Accuracy.—These results should be within 20 per cent. The gauge readings only being twice a week almost prohibit giving an accuracy during May, June, and July.

General.—Kooskanax creek is a stream about 25 miles long, rising in the divide between Trout lake and Upper Arrow lake, southeast of Nakusp, and discharging into Upper Arrow lake near Nakusp. The drainage area is about 125 square miles.

There is a power site in the canyon about a mile from the mouth, where, at some future date, the town of Nakusp might obtain a suitable development for lighting purposes and small industries. The canyon is about 100 feet long, 30 feet wide, and about 40 to 50 feet deep. The low-water flow is seldom less than 100 c.f.s. Mr. C. E. Webb made a preliminary report in March, 1914, on the power possibilities of this creek near Nakusp. His report is included in part 2 of this report.

DISCHARGE MEASUREMENTS of Kooskanax River near Nakusp, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|----------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Mar. 19..... | C. E. Webb | 1048 | 27 | 204 | 0.59 | 0.7 | 122 |
| May 16..... | J. A. E. and G. K. B. | 1672 | 26 | 274 | 5.63 | 4.2 | 1,540 |
| June 13..... | G. K. B. | 1927 | 26 | 273 | 4.30 | 3.50 | 1,150 |
| " 20..... | G. K. B. | 1927 | 26 | 275 | 5.40 | 3.80 | 1,480 |
| " 28..... | J. A. E. | 1909 | 27 | 293 | 4.73 | 3.34 | 1,390 |
| Aug. 12..... | J. A. E. | 1909 | 27 | 229 | 1.07 | 1.1 | 245 |
| Sept. 4..... | J. A. E., C. E. R. | 1928 | 28 | 221 | 0.62 | 0.65 | 137 |
| Oct. 28..... | J. A. E. | 1909 | 29 | 240 | 1.28 | 1.15 | 309 |
| Nov. 23..... | J. A. E., O. J. B. | 1909 | 28 | 230 | 0.95 | 1.2 | 220 |

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DAILY GAUGE HEIGHT AND DISCHARGE at Kooskanax Creek near Nakusp,
for 1914.

| DAY. | March. | | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 0.7 | 115 | | 920 | | 1,740 |
| 2..... | | | | 125 | | 945 | | 1,780 |
| 3..... | | | 135 | 135 | 2.06 | 975 | 4.1 | 1,820 |
| 4..... | | | | 145 | | 1,010 | | 1,810 |
| 5..... | | | 0.8 | 155 | | 1,045 | | 1,790 |
| 6..... | | | | 195 | 2.8 | 1,080 | | 1,770 |
| 7..... | | | | 235 | | 1,040 | 4.0 | 1,760 |
| 8..... | | | 1.1 | 275 | | 1,000 | | 1,720 |
| 9..... | | | | 305 | | 960 | | 1,680 |
| 10..... | | | | 335 | 2.5 | 920 | 3.8 | 1,650 |
| 11..... | | | | 365 | | 935 | | 1,590 |
| 12..... | | | 1.4 | 395 | | 955 | | 1,530 |
| 13..... | | | | 410 | 2.6 | 975 | 3.5 | 1,470 |
| 14..... | | | | 425 | | 1,275 | | 1,480 |
| 15..... | | | 1.5 | 440 | | 1,575 | | 1,500 |
| 16..... | | | | 460 | 4.2 | 1,880 | | 1,510 |
| 17..... | | | | 480 | 3.1 | 1,250 | 3.6 | 1,530 |
| 18..... | | | | 500 | | 1,340 | | 1,570 |
| 19..... | 0.7 | 115 | 1.7 | 530 | | 1,430 | | 1,610 |
| 20..... | | 115 | | 620 | 3.6 | 1,530 | 3.8 | 1,650 |
| 21..... | 0.7 | 115 | | 720 | | 1,560 | | 1,620 |
| 22..... | | 115 | | 820 | | 1,590 | | 1,590 |
| 23..... | | 115 | 2.5 | 920 | | 1,620 | | 1,560 |
| 24..... | 0.7 | 115 | | 975 | 3.8 | 1,650 | 3.6 | 1,530 |
| 25..... | | 112 | | 1,030 | | 1,660 | | 1,500 |
| 26..... | | 109 | 2.8 | 1,080 | | 1,680 | | 1,470 |
| 27..... | | 105 | | 1,010 | 3.9 | 1,700 | | 1,440 |
| 28..... | 0.65 | 102 | | 940 | | 1,750 | 3.4 | 1,410 |
| 29..... | | 108 | 2.4 | 870 | | 1,700 | | 1,410 |
| 30..... | | 111 | | 895 | | 1,700 | 3.4 | 1,410 |
| 31..... | 0.7 | 115 | | | 3.9 | 1,700 | | |

DAILY GAUGE HEIGHT AND DISCHARGE at Kooskanox Creek near Nakusp,
for 1914—Concluded.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 1,470 | | 990 | | 128 | | 680 | 1-3 | 355 | | 235 |
| 2 | | 1,530 | 2-5 | 920 | 0-7 | 115 | | 690 | | 345 | 1-0 | 235 |
| 3 | 3-7 | 1,590 | | 820 | | 115 | | 700 | | 335 | | 225 |
| 4 | | 1,570 | | 720 | | 115 | 2-1 | 720 | | 325 | | 215 |
| 5 | | 1,560 | 1-9 | 620 | | 115 | | 700 | 1-2 | 315 | | 205 |
| 6 | | 1,550 | | 560 | 0-7 | 115 | | 685 | | 335 | 0-9 | 195 |
| 7 | 3-6 | 1,530 | | 500 | | 118 | 2-0 | 670 | | 365 | | 195 |
| 8 | | 1,500 | | 445 | | 120 | | 650 | 1-4 | 395 | | 195 |
| 9 | | 1,470 | 1-4 | 395 | 0-72 | 123 | | 630 | | 395 | 0-9 | 195 |
| 10 | | 1,440 | | 365 | | 121 | | 610 | | 395 | | 195 |
| 11 | 3-4 | 1,410 | | 335 | | 119 | 1-85 | 597 | 1-4 | 395 | | 195 |
| 12 | | 1,380 | 1-2 | 315 | | 117 | | 590 | | 385 | | 195 |
| 13 | | 1,350 | | 305 | 0-7 | 115 | | 580 | | 375 | 0-9 | 195 |
| 14 | | 1,320 | | 295 | | 111 | 1-8 | 575 | | 365 | | 195 |
| 15 | 3-2 | 1,300 | | 285 | | 107 | | 545 | 1-3 | 355 | | 195 |
| 16 | | 1,300 | 1-1 | 275 | 0-65 | 102 | | 525 | | 370 | 0-9 | 195 |
| 17 | | 1,300 | | 261 | | 155 | | 505 | | 380 | | 185 |
| 18 | | 1,300 | | 248 | | 210 | 1-6 | 485 | 1-4 | 395 | | 175 |
| 19 | 3-2 | 1,300 | 1-0 | 235 | | 260 | | 470 | | 395 | | 165 |
| 20 | | 1,280 | | 225 | 1-20 | 315 | | 455 | | 395 | 0-8 | 155 |
| 21 | | 1,260 | | 215 | | 355 | 1-5 | 440 | | 395 | | 155 |
| 22 | 3-1 | 1,250 | | 205 | | 395 | | 415 | 1-4 | 395 | | 155 |
| 23 | | 1,250 | 0-9 | 195 | 1-50 | 449 | | 395 | | 365 | | 155 |
| 24 | | 1,250 | | 195 | | 485 | | 375 | | 335 | | 155 |
| 25 | | 1,250 | | 195 | | 530 | 1-3 | 355 | 1-2 | 315 | | 155 |
| 26 | 3-1 | 1,250 | 0-9 | 195 | | 575 | | 340 | | 295 | | 155 |
| 27 | | 1,230 | | 185 | 1-90 | 620 | | 330 | | 275 | 0-8 | 155 |
| 28 | | 1,210 | | 175 | | 630 | 1-2 | 315 | | 255 | | 140 |
| 29 | 3-0 | 1,200 | | 165 | | 650 | | 325 | 1-0 | 235 | | 130 |
| 30 | | 1,180 | 0-8 | 155 | 2-00 | 670 | | 335 | | 235 | 0-7 | 115 |
| 31 | | 1,060 | | 141 | | | | 345 | | | | 115 |

MONTHLY DISCHARGE of Kooskanox Creek near Nakusp, B.C., for 1914.

(Drainage area, 125 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 1,080 | 115 | 530 | 4-25 | 4-74 | 31,500 |
| May | 1,880 | 920 | 1,330 | 10-6 | 12-2 | 81,800 |
| June | 1,820 | 1,410 | 1,600 | 12-8 | 14-3 | 95,200 |
| July | 1,590 | 1,060 | 1,350 | 10-8 | 12-4 | 83,000 |
| August | 990 | 141 | 362 | 2-90 | 3-34 | 22,300 |
| September | 670 | 102 | 272 | 2-18 | 2-43 | 16,200 |
| October | 720 | 315 | 517 | 4-14 | 4-77 | 31,800 |
| November | 395 | 235 | 336 | 2-69 | 3-00 | 20,000 |
| December | 235 | 115 | 178 | 1-42 | 1-64 | 10,900 |

Accuracy "D."

SESSIONAL PAPER No. 25e

KOOTENAY RIVER AT UPPER BONNINGTON FALLS (3075).

Location.—At the head-race of the West Kootenay Power and Light Company's plant No. 2, at Upper Bonnington, 10 miles west of Nelson and about 15 miles from the mouth of the Kootenay, near Castlegar. Nelson district.

Records Available.—October, 1907, to December, 1914, through the courtesy of the West Kootenay Power and Light Company.

Climatic Conditions.—The climatic conditions are similar to those at Nelson (see Kootenay river near Nelson). The warming influence of Kootenay lake keeps the water of the river below the lake at a temperature such that the river never freezes over, and very little, if any, frazil ice and anchor ice is formed.

Gauge.—The elevation of the water each day was determined by means of measuring the distance to the surface of the water from a known point. These readings were taken by the West Kootenay Power and Light Company for their own information. The gauge is located at a point at the upstream end of the head-race, where part of the water is diverted to the turbines, and the remainder flows over the falls, some 200 feet below.

Method of Compilation.—The only metering section on Kootenay river between the lake and the mouth is near Glade, about 6 miles below Upper Bonnington. The only stream of any size entering between these points is Slocan river. The discharge curve for the Kootenay at Bonnington falls, near Nelson, and at Bonnington pool, is obtained by subtracting the discharge of Slocan river from the discharge of the Kootenay river near Glade. For more complete information on the studies carried on regarding the Kootenay between Kootenay lake and the mouth see report in Part 2, called, "Compilation of data on Kootenay river, between Kootenay lake and the mouth."

Accuracy.—As we do not know sufficient regarding the gauge, these data are not guaranteed, but it appears that they agree very well with similar data gathered in 1914 at Bonnington pool and near Nelson.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1907.

| DAY. | October. | | November. | | December. | |
|------|--------------|------------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge. | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 192-0 | 36,200 | 189-0 | 18,800 | 186-9 | 9,900 |
| 2. | 192-0 | 36,200 | 189-0 | 18,800 | 186-9 | 9,900 |
| 3. | 191-9 | 35,500 | 189-0 | 18,800 | 186-9 | 9,900 |
| 4. | 191-9 | 35,500 | 189-0 | 18,800 | 186-8 | 9,600 |
| 5. | 191-8 | 34,800 | 189-0 | 18,800 | 186-8 | 9,600 |
| 6. | 191-7 | 34,200 | 189-0 | 18,800 | 187-5 | 12,200 |
| 7. | 191-5 | 33,000 | 188-0 | 18,300 | 187-7 | 13,000 |
| 8. | 191-0 | 30,000 | 188-8 | 17,900 | 187-6 | 12,600 |
| 9. | 191-8 | 28,800 | 188-7 | 17,400 | 187-6 | 12,600 |
| 10. | 196-5 | 27,000 | 188-6 | 16,900 | 187-5 | 12,200 |
| 11. | 190-4 | 26,400 | 188-6 | 16,900 | 187-5 | 12,200 |
| 12. | 190-4 | 26,400 | 188-6 | 16,900 | 187-5 | 12,200 |
| 13. | 190-4 | 26,400 | 188-5 | 16,400 | 187-5 | 12,200 |
| 14. | 190-3 | 25,800 | 188-0 | 14,200 | 187-5 | 12,200 |
| 15. | 190-3 | 25,800 | 188-0 | 14,200 | 187-5 | 12,200 |
| 16. | 190-3 | 25,800 | 187-9 | 13,800 | 187-5 | 12,200 |
| 17. | 190-3 | 25,800 | 187-5 | 12,200 | 187-5 | 12,200 |
| 18. | 190-0 | 24,000 | 187-3 | 11,400 | 187-3 | 11,400 |
| 19. | 190-0 | 24,000 | 187-2 | 11,000 | 187-3 | 11,400 |
| 20. | 189-8 | 22,900 | 187-2 | 11,000 | 187-3 | 11,400 |
| 21. | 189-7 | 22,400 | 187-2 | 11,000 | 187-1 | 10,600 |
| 22. | 189-7 | 22,400 | 187-2 | 11,000 | 187-1 | 10,600 |
| 23. | 189-5 | 21,400 | 187-1 | 10,600 | 187-1 | 10,600 |
| 24. | 189-5 | 21,400 | 187-1 | 10,200 | 187-0 | 10,200 |
| 25. | 189-5 | 21,400 | 187-0 | 10,200 | 187-0 | 10,200 |
| 26. | 189-4 | 20,800 | 187-0 | 10,200 | 187-0 | 10,200 |
| 27. | 189-4 | 20,800 | 187-0 | 10,200 | 186-9 | 9,900 |
| 28. | 189-1 | 19,300 | 187-0 | 10,200 | 186-9 | 9,900 |
| 29. | 189-1 | 19,300 | 187-0 | 10,200 | 186-9 | 9,900 |
| 30. | 189-1 | 19,300 | 186-9 | 9,900 | 187-1 | 10,600 |
| 31. | 189-1 | 19,300 | ..... | ..... | 187-1 | 10,600 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1907.

(Drainage area, 17,800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| October | 36,200 | 19,300 | 26,200 | 1-47 | 1-70 | 1,610,000 |
| November | 18,800 | 9,900 | 14,200 | 0-80 | 0-89 | 845,000 |
| December | 13,000 | 9,600 | 11,100 | 0-62 | 0-72 | 682,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1908.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 187-0 | 10,200 | 186-1 | 7,500 | 185-9 | 7,000 | 187-4 | 11,800 | 193-0 | 43,200 | 196-5 | 73,000 |
| 2 | 186-9 | 9,900 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 193-3 | 45,300 | 196-7 | 75,000 |
| 3 | 186-9 | 9,900 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 193-5 | 46,700 | 196-8 | 76,000 |
| 4 | 186-8 | 9,600 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 193-5 | 46,700 | 196-9 | 77,000 |
| 5 | 186-7 | 9,300 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 193-6 | 47,400 | 197-0 | 79,000 |
| 6 | 186-7 | 9,300 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 193-8 | 48,800 | 197-2 | 81,000 |
| 7 | 186-6 | 9,000 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 194-1 | 51,200 | 197-5 | 84,000 |
| 8 | 186-6 | 9,000 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 194-5 | 54,500 | 197-8 | 88,000 |
| 9 | 186-6 | 9,000 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 194-9 | 58,100 | 198-0 | 91,000 |
| 10 | 186-6 | 9,000 | 186-0 | 7,200 | 185-9 | 7,000 | 187-4 | 11,800 | 195-1 | 59,900 | 198-3 | 94,000 |
| 11 | 186-6 | 9,000 | 186-0 | 7,200 | 185-9 | 7,000 | 187-5 | 12,200 | 195-3 | 61,700 | 198-5 | 98,500 |
| 12 | 186-6 | 9,000 | 186-0 | 7,200 | 185-9 | 7,000 | 187-5 | 12,200 | 195-5 | 63,500 | 198-8 | 101,000 |
| 13 | 186-6 | 9,000 | 186-0 | 7,200 | 185-9 | 7,000 | 187-6 | 12,600 | 195-6 | 64,400 | 199-0 | 104,000 |
| 14 | 186-7 | 9,300 | 186-0 | 7,200 | 186-0 | 7,200 | 187-7 | 13,000 | 195-9 | 67,100 | 199-2 | 107,000 |
| 15 | 186-7 | 9,300 | 186-0 | 7,200 | 186-0 | 7,200 | 188-0 | 14,200 | 196-0 | 68,000 | 199-3 | 108,000 |
| 16 | 186-5 | 8,700 | 186-0 | 7,200 | 186-1 | 7,500 | 188-3 | 15,400 | 196-2 | 70,000 | 199-5 | 110,000 |
| 17 | 186-4 | 8,400 | 186-0 | 7,200 | 186-2 | 7,800 | 188-5 | 16,400 | 196-3 | 71,000 | 199-7 | 113,000 |
| 18 | 186-4 | 8,400 | 186-0 | 7,200 | 186-4 | 8,400 | 189-0 | 18,800 | 196-4 | 72,000 | 199-7 | 113,000 |
| 19 | 186-5 | 8,700 | 186-0 | 7,200 | 186-5 | 8,700 | 189-4 | 20,800 | 196-5 | 73,000 | 199-7 | 113,000 |
| 20 | 186-6 | 9,000 | 186-0 | 7,200 | 186-6 | 9,000 | 190-0 | 24,000 | 196-4 | 72,000 | 199-7 | 113,000 |
| 21 | 186-6 | 9,000 | 186-0 | 7,200 | 186-6 | 9,000 | 190-5 | 27,000 | 196-4 | 72,000 | 199-6 | 111,000 |
| 22 | 186-6 | 9,000 | 186-0 | 7,200 | 186-7 | 9,300 | 191-0 | 30,000 | 196-4 | 72,000 | 199-5 | 110,000 |
| 23 | 186-5 | 8,700 | 186-0 | 7,200 | 186-8 | 9,600 | 191-5 | 33,000 | 196-4 | 72,000 | 199-3 | 108,000 |
| 24 | 186-5 | 8,700 | 186-0 | 7,200 | 186-9 | 9,900 | 191-9 | 33,300 | 196-4 | 72,000 | 199-1 | 106,000 |
| 25 | 186-4 | 8,400 | 186-0 | 7,200 | 186-9 | 9,900 | 192-2 | 37,600 | 196-4 | 72,000 | 199-0 | 104,000 |
| 26 | 186-4 | 8,400 | 186-0 | 7,200 | 186-9 | 9,900 | 192-5 | 39,700 | 196-4 | 72,000 | 198-9 | 102,000 |
| 27 | 186-3 | 8,100 | 186-0 | 7,200 | 187-0 | 10,200 | 192-8 | 41,800 | 196-4 | 72,000 | 198-7 | 99,500 |
| 28 | 186-2 | 7,800 | 186-0 | 7,200 | 187-0 | 10,200 | 193-0 | 43,200 | 196-4 | 72,000 | 198-5 | 96,500 |
| 29 | 186-4 | 8,400 | 186-0 | 7,200 | 187-1 | 10,600 | 193-0 | 43,200 | 196-4 | 72,000 | 198-4 | 95,000 |
| 30 | 186-4 | 8,400 | 186-0 | 7,200 | 187-4 | 11,800 | 193-0 | 43,200 | 196-4 | 72,000 | 198-3 | 94,000 |
| 31 | 186-2 | 7,800 | 186-0 | 7,200 | 187-4 | 11,800 | 193-0 | 43,200 | 196-5 | 73,000 | 198-3 | 94,000 |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1908—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 198-1 | 92,000 | 195-1 | 59,900 | 190-2 | 25,200 | 188-5 | 16,400 | 187-2 | 11,000 | 187-7 | 13,000 |
| 2 | 198-0 | 91,000 | 194-8 | 57,200 | 190-1 | 24,600 | 188-5 | 16,400 | 187-3 | 11,400 | 187-9 | 13,800 |
| 3 | 198-0 | 91,000 | 194-5 | 54,500 | 190-1 | 24,600 | 188-5 | 18,400 | 187-3 | 11,400 | 187-9 | 13,800 |
| 4 | 198-0 | 91,000 | 194-3 | 52,800 | 190-0 | 24,000 | 188-4 | 15,900 | 187-3 | 11,400 | 187-9 | 13,800 |
| 5 | 197-9 | 89,500 | 194-1 | 51,200 | 190-0 | 24,000 | 188-3 | 15,400 | 187-3 | 11,400 | 187-9 | 13,800 |
| 6 | 197-7 | 86,500 | 194-0 | 50,400 | 190-0 | 24,000 | 188-2 | 15,000 | 187-3 | 11,400 | 187-6 | 12,600 |
| 7 | 197-5 | 84,000 | 193-9 | 49,600 | 190-0 | 24,000 | 188-1 | 14,600 | 187-3 | 11,400 | 187-4 | 11,800 |
| 8 | 197-5 | 84,000 | 193-6 | 47,400 | 190-0 | 24,000 | 188-0 | 14,200 | 187-3 | 11,400 | 187-3 | 11,400 |
| 9 | 197-5 | 84,000 | 193-5 | 46,700 | 189-7 | 22,400 | 187-9 | 13,800 | 187-2 | 11,000 | 187-2 | 11,000 |
| 10 | 197-5 | 84,000 | 193-3 | 45,300 | 189-6 | 21,900 | 187-8 | 13,400 | 187-2 | 11,000 | 187-1 | 10,600 |
| 11 | 197-2 | 81,000 | 193-1 | 43,900 | 189-6 | 21,900 | 187-7 | 13,000 | 187-2 | 11,000 | 187-0 | 10,200 |
| 12 | 197-2 | 81,000 | 193-0 | 43,200 | 189-6 | 21,900 | 187-7 | 13,000 | 187-2 | 11,000 | 187-0 | 10,200 |
| 13 | 197-2 | 81,000 | 192-9 | 42,500 | 189-6 | 21,900 | 187-7 | 13,000 | 187-2 | 11,000 | 187-0 | 10,200 |
| 14 | 197-2 | 81,000 | 192-7 | 41,100 | 189-6 | 21,900 | 187-7 | 13,000 | 187-2 | 11,000 | 187-0 | 10,200 |
| 15 | 197-2 | 81,000 | 192-5 | 39,700 | 189-5 | 21,400 | 187-6 | 12,600 | 187-0 | 10,200 | 187-0 | 10,200 |
| 16 | 197-2 | 81,000 | 192-3 | 38,300 | 189-5 | 21,400 | 187-6 | 12,600 | 187-0 | 10,200 | 187-0 | 10,200 |
| 17 | 197-1 | 80,000 | 192-0 | 35,200 | 189-5 | 21,400 | 187-6 | 12,600 | 187-0 | 10,200 | 187-0 | 10,200 |
| 18 | 197-0 | 79,000 | 191-8 | 34,800 | 189-5 | 21,400 | 187-6 | 12,600 | 187-0 | 10,200 | 186-5 | 8,700 |
| 19 | 197-0 | 79,000 | 191-7 | 34,200 | 189-4 | 20,800 | 187-6 | 12,600 | 187-0 | 10,200 | 186-5 | 8,700 |
| 20 | 196-7 | 75,000 | 191-6 | 33,600 | 189-3 | 20,300 | 187-6 | 12,600 | 187-0 | 10,200 | 186-5 | 8,700 |
| 21 | 196-6 | 74,000 | 191-5 | 33,000 | 189-2 | 19,800 | 187-6 | 12,600 | 187-1 | 10,600 | 186-5 | 8,700 |
| 22 | 196-5 | 73,000 | 191-4 | 32,400 | 189-2 | 19,800 | 187-6 | 12,600 | 187-4 | 11,800 | 186-5 | 8,700 |
| 23 | 196-5 | 73,000 | 191-3 | 31,800 | 189-1 | 19,300 | 187-5 | 12,200 | 187-5 | 12,200 | 186-4 | 8,400 |
| 24 | 196-5 | 73,000 | 191-2 | 31,200 | 189-1 | 19,300 | 187-5 | 12,200 | 187-5 | 12,200 | 186-4 | 8,400 |
| 25 | 196-3 | 71,000 | 191-0 | 30,000 | 189-0 | 18,800 | 187-5 | 12,200 | 187-5 | 12,200 | 186-4 | 8,400 |
| 26 | 196-2 | 70,000 | 191-0 | 30,000 | 189-0 | 18,800 | 187-5 | 12,200 | 187-5 | 12,200 | 186-4 | 8,400 |
| 27 | 196-1 | 69,000 | 190-9 | 29,400 | 188-9 | 18,300 | 187-5 | 12,200 | 187-5 | 12,200 | 186-4 | 8,400 |
| 28 | 196-0 | 68,000 | 190-7 | 28,200 | 188-8 | 17,900 | 187-4 | 11,800 | 187-5 | 12,200 | 186-4 | 8,400 |
| 29 | 195-7 | 65,300 | 190-6 | 27,600 | 188-7 | 17,400 | 187-3 | 11,400 | 187-5 | 12,200 | 186-4 | 8,400 |
| 30 | 195-5 | 63,500 | 190-5 | 27,000 | 188-6 | 16,900 | 187-3 | 11,400 | 187-5 | 12,200 | 186-2 | 7,800 |
| 31 | 195-3 | 61,700 | 190-5 | 27,000 | | | 187-3 | 11,400 | | | 186-0 | 7,200 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1908.

(Drainage area, 17,800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 10,200 | 7,800 | 8,880 | 0-50 | 0-58 | 546,000 |
| February | 7,500 | 7,200 | 7,200 | 0-40 | 0-43 | 414,000 |
| March | 11,800 | 7,000 | 8,600 | 0-48 | 0-55 | 529,000 |
| April | 43,200 | 11,800 | 21,700 | 1-22 | 1-36 | 1,290,000 |
| May | 73,000 | 43,200 | 63,800 | 3-58 | 4-13 | 3,920,000 |
| June | 113,000 | 73,000 | 94,100 | 5-29 | 5-90 | 5,600,000 |
| July | 92,000 | 61,700 | 72,100 | 4-05 | 4-67 | 4,430,000 |
| August | 59,900 | 27,000 | 39,700 | 2-23 | 2-57 | 2,440,000 |
| September | 25,200 | 16,900 | 21,300 | 1-21 | 1-35 | 1,270,000 |
| October | 16,400 | 11,400 | 13,300 | 0-75 | 0-86 | 818,000 |
| November | 12,200 | 10,200 | 10,300 | 0-58 | 0-65 | 615,000 |
| December | 13,800 | 7,200 | 10,100 | 0-57 | 0-66 | 621,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 186-3 | 8,100 | 186-1 | 7,500 | 186-2 | 7,800 | 186-4 | 8,400 | 188-0 | 14,200 | 195-0 | 59,000 |
| 2. | 186-1 | 7,500 | 186-1 | 7,500 | 186-2 | 7,800 | 186-6 | 9,000 | 188-0 | 14,600 | 195-5 | 63,500 |
| 3. | 186-0 | 7,200 | 186-1 | 7,500 | 186-2 | 7,800 | 186-7 | 9,300 | 188-3 | 15,400 | 196-0 | 68,000 |
| 4. | 186-1 | 7,500 | 186-1 | 7,500 | 186-2 | 7,800 | 186-8 | 9,650 | 188-4 | 15,900 | 196-5 | 73,000 |
| 5. | 186-2 | 7,800 | 186-1 | 7,500 | 186-2 | 7,800 | 186-9 | 9,900 | 188-5 | 16,400 | 197-0 | 79,000 |
| 6. | 186-1 | 7,500 | 186-1 | 7,500 | 186-1 | 7,500 | 186-9 | 9,900 | 188-6 | 16,900 | 197-4 | 83,000 |
| 7. | 186-0 | 7,200 | 186-1 | 7,500 | 186-1 | 7,500 | 187-0 | 10,200 | 188-8 | 17,900 | 197-7 | 86,000 |
| 8. | 186-0 | 7,200 | 186-1 | 7,500 | 186-1 | 7,500 | 187-0 | 10,200 | 189-0 | 18,800 | 198-0 | 91,000 |
| 9. | 186-0 | 7,200 | 186-1 | 7,500 | 186-1 | 7,500 | 187-0 | 10,200 | 189-1 | 19,300 | 198-2 | 93,000 |
| 10. | 186-2 | 7,800 | 186-1 | 7,500 | 186-1 | 7,500 | 187-0 | 10,200 | 189-3 | 20,300 | 198-4 | 95,000 |
| 11. | ..... | 7,800 | 186-2 | 7,800 | 186-1 | 7,500 | 187-0 | 10,200 | 189-4 | 20,800 | 198-6 | 98,000 |
| 12. | Ice. | 7,800 | 186-2 | 7,800 | 186-1 | 7,500 | 187-0 | 10,200 | 189-5 | 21,400 | 198-6 | 98,000 |
| 13. | 186-2 | 7,800 | 186-2 | 7,800 | 186-1 | 7,500 | 187-0 | 10,200 | 189-6 | 21,900 | 198-7 | 99,000 |
| 14. | 185-9 | 7,000 | 186-2 | 7,800 | 186-1 | 7,500 | 187-0 | 10,200 | 189-8 | 22,900 | 198-9 | 102,000 |
| 15. | 185-8 | 6,800 | 186-2 | 7,800 | 186-1 | 7,500 | 187-0 | 10,200 | 189-9 | 23,400 | 199-0 | 104,000 |
| 16. | 185-8 | 6,800 | 186-2 | 7,800 | 186-1 | 7,500 | 187-0 | 10,200 | 190-0 | 24,600 | 199-0 | 104,000 |
| 17. | 185-8 | 6,800 | 186-2 | 7,800 | 186-1 | 7,500 | 187-1 | 10,800 | 190-1 | 24,600 | 199-1 | 106,000 |
| 18. | 185-8 | 6,800 | 186-2 | 7,800 | 186-2 | 7,800 | 187-1 | 10,600 | 190-3 | 25,800 | 199-2 | 107,000 |
| 19. | 185-8 | 6,800 | 186-2 | 7,800 | 186-3 | 8,100 | 187-1 | 10,600 | 190-5 | 27,000 | 199-3 | 108,000 |
| 20. | 185-9 | 7,000 | 186-3 | 8,100 | 186-3 | 8,100 | 187-2 | 11,000 | 190-7 | 28,200 | 199-3 | 108,000 |
| 21. | 185-9 | 7,000 | 186-3 | 8,100 | 186-2 | 7,800 | 187-2 | 11,000 | 190-8 | 28,800 | 199-4 | 109,000 |
| 22. | 186-0 | 7,200 | 186-3 | 8,100 | 186-1 | 7,500 | 187-3 | 11,400 | 191-1 | 30,600 | 199-5 | 110,000 |
| 23. | 186-0 | 7,200 | 186-2 | 7,800 | 186-1 | 7,500 | 187-4 | 11,800 | 191-2 | 31,200 | 199-4 | 109,000 |
| 24. | 186-1 | 7,500 | 186-2 | 7,800 | 186-1 | 7,500 | 187-4 | 11,800 | 191-5 | 33,000 | 199-1 | 106,000 |
| 25. | 186-1 | 7,500 | 186-2 | 7,800 | 186-1 | 7,500 | 187-5 | 12,200 | 191-7 | 34,200 | 199-0 | 104,000 |
| 26. | 186-1 | 7,500 | 186-2 | 7,800 | 186-1 | 7,500 | 187-5 | 12,200 | 192-1 | 36,900 | 198-9 | 102,000 |
| 27. | 186-1 | 7,500 | 186-2 | 7,800 | 186-1 | 7,500 | 187-6 | 12,600 | 192-5 | 39,700 | 198-7 | 99,000 |
| 28. | 186-1 | 7,500 | 186-2 | 7,800 | 186-1 | 7,500 | 187-7 | 13,000 | 193-0 | 43,200 | 198-5 | 96,000 |
| 29. | 186-1 | 7,500 | ..... | ..... | 186-2 | 7,800 | 187-8 | 13,400 | 193-5 | 46,700 | 198-3 | 94,000 |
| 30. | 186-1 | 7,500 | ..... | ..... | 186-2 | 7,800 | 187-9 | 13,800 | 194-0 | 50,400 | 198-2 | 93,000 |
| 31. | 186-1 | 7,500 | ..... | ..... | 186-3 | 8,100 | ..... | ..... | 194-5 | 54,500 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 198-7 | 99,000 | 194-6 | 55,400 | 190-1 | 24,600 | 188-5 | 16,400 | 187-5 | 12,200 | 188-7 | 17,400 |
| 2. | 198-6 | 93,000 | 194-6 | 55,400 | 190-0 | 24,000 | 188-5 | 16,400 | 187-5 | 12,200 | 188-9 | 18,300 |
| 3. | 198-5 | 96,000 | 194-5 | 54,500 | 189-9 | 23,400 | 188-5 | 16,400 | 187-5 | 12,200 | 189-0 | 18,800 |
| 4. | 194-4 | 95,000 | 194-2 | 52,000 | 189-9 | 23,400 | 188-5 | 16,400 | 187-5 | 12,200 | 189-0 | 18,800 |
| 5. | 198-3 | 94,000 | 194-0 | 50,400 | 189-9 | 23,400 | 188-5 | 16,400 | 187-6 | 12,600 | 189-0 | 18,800 |
| 6. | 198-3 | 94,000 | 193-8 | 48,800 | 189-9 | 23,400 | 188-5 | 16,400 | 187-7 | 13,000 | 189-0 | 18,800 |
| 7. | 198-3 | 94,000 | 193-6 | 47,400 | 189-9 | 23,400 | 188-5 | 16,400 | 187-8 | 13,400 | 189-0 | 18,800 |
| 8. | 198-3 | 94,000 | 193-5 | 46,700 | 189-9 | 23,400 | 188-5 | 16,400 | 187-9 | 13,800 | 189-0 | 18,800 |
| 9. | 198-3 | 94,000 | 193-4 | 46,000 | 189-7 | 22,400 | 188-5 | 16,400 | 187-9 | 13,800 | 189-0 | 18,800 |
| 10. | 198-3 | 94,000 | 193-2 | 44,600 | 189-5 | 21,400 | 188-5 | 16,400 | 187-9 | 13,800 | 188-7 | 17,400 |
| 11. | 198-2 | 93,000 | 193-0 | 43,200 | 189-5 | 21,400 | 188-5 | 16,400 | 187-9 | 13,800 | 188-6 | 16,900 |
| 12. | 198-1 | 92,000 | 192-9 | 42,500 | 189-5 | 21,400 | 188-5 | 16,400 | 187-9 | 13,800 | 188-6 | 16,900 |
| 13. | 198-0 | 91,000 | 192-8 | 41,800 | 189-5 | 21,400 | 188-5 | 16,400 | 187-8 | 13,400 | 188-6 | 16,900 |
| 14. | 197-8 | 88,000 | 192-6 | 40,400 | 189-4 | 20,800 | 188-5 | 16,400 | 187-7 | 13,000 | 188-6 | 16,900 |
| 15. | 197-6 | 85,000 | 192-3 | 39,700 | 189-3 | 20,300 | 188-3 | 15,400 | 187-7 | 13,000 | 188-7 | 17,400 |
| 16. | 197-5 | 84,000 | 192-2 | 37,600 | 189-1 | 19,300 | 188-2 | 15,000 | 187-6 | 12,600 | 188-8 | 17,900 |
| 17. | 197-4 | 83,000 | 192-0 | 36,200 | 189-1 | 19,300 | 188-1 | 14,600 | 187-6 | 12,600 | 188-8 | 17,900 |
| 18. | 197-2 | 81,000 | 191-8 | 34,800 | 189-1 | 19,300 | 188-0 | 14,200 | 187-6 | 12,600 | 188-6 | 16,900 |
| 19. | 197-0 | 79,000 | 191-7 | 34,200 | 189-1 | 19,300 | 188-0 | 14,200 | 187-7 | 13,000 | 188-5 | 16,400 |
| 20. | 196-9 | 77,000 | 191-6 | 33,600 | 189-1 | 19,300 | 188-0 | 14,200 | 187-7 | 13,000 | 188-2 | 15,000 |
| 21. | 196-7 | 75,000 | 191-5 | 33,000 | 189-1 | 19,300 | 188-0 | 14,200 | 187-7 | 13,000 | 188-0 | 14,200 |
| 22. | 196-5 | 73,000 | 191-4 | 32,400 | 188-9 | 18,300 | 187-9 | 13,800 | 187-6 | 12,600 | 188-0 | 14,200 |
| 23. | 196-2 | 70,000 | 191-3 | 31,800 | 188-7 | 17,400 | 187-8 | 13,400 | 187-6 | 12,600 | 188-0 | 14,200 |
| 24. | 196-0 | 65,000 | 191-1 | 30,600 | 188-5 | 16,400 | 187-7 | 13,000 | 187-5 | 12,200 | 188-0 | 14,200 |
| 25. | 195-8 | 66,000 | 191-0 | 30,000 | 188-5 | 16,400 | 187-7 | 13,000 | 187-5 | 12,200 | 187-8 | 13,400 |
| 26. | 195-7 | 65,300 | 191-0 | 30,000 | 188-5 | 16,400 | 187-7 | 13,000 | 187-7 | 13,400 | 187-6 | 12,600 |
| 27. | 195-5 | 63,500 | 190-9 | 29,400 | 188-5 | 16,400 | 187-7 | 13,000 | 188-0 | 14,200 | 187-5 | 12,200 |
| 28. | 195-4 | 62,600 | 190-7 | 28,200 | 188-5 | 16,400 | 187-7 | 13,000 | 188-1 | 14,600 | 187-2 | 11,000 |
| 29. | 195-2 | 60,800 | 190-6 | 27,600 | 188-5 | 16,400 | 187-7 | 13,000 | 188-2 | 15,000 | 187-1 | 10,600 |
| 30. | 194-9 | 58,100 | 190-5 | 27,000 | 188-5 | 16,400 | 187-7 | 13,000 | 188-3 | 15,400 | 187-0 | 10,200 |
| 31. | 194-8 | 57,200 | 190-4 | 26,400 | ..... | ..... | 187-7 | 13,000 | ..... | ..... | 187-0 | 10,200 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1909.

(Drainage area, 17,800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square Mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| January..... | 8,100 | 6,800 | 7,350 | 0-41 | 0-47 | 452,000 |
| February..... | 8,100 | 7,500 | 7,740 | 0-44 | 0-46 | 430,000 |
| March..... | 8,100 | 7,500 | 7,650 | 0-43 | 0-50 | 470,000 |
| April..... | 13,800 | 8,400 | 10,800 | 0-61 | 0-68 | 645,000 |
| May..... | 54,500 | 14,200 | 27,100 | 1-52 | 1-75 | 1,670,000 |
| June..... | 110,000 | 59,000 | 98,200 | 5-52 | 6-16 | 5,840,000 |
| July..... | 99,000 | 57,200 | 81,500 | 4-58 | 5-28 | 5,010,000 |
| August..... | 55,400 | 26,400 | 40,200 | 2-26 | 2-61 | 2,470,000 |
| September..... | 24,600 | 16,400 | 20,100 | 1-13 | 1-26 | 1,200,000 |
| October..... | 16,400 | 13,000 | 14,900 | 0-84 | 0-97 | 916,000 |
| November..... | 15,400 | 12,200 | 13,200 | 0-74 | 0-83 | 786,000 |
| December..... | 18,800 | 10,200 | 15,800 | 0-89 | 1-03 | 972,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 187.5 | 12,200 | 186.5 | 8,700 | 186.0 | 7,200 | 189.5 | 21,400 | 195.5 | 63,500 | 197.8 | 88,000 |
| 2..... | 187.3 | 11,400 | 186.5 | 8,700 | 186.0 | 7,200 | 189.5 | 21,400 | 195.8 | 66,200 | 197.8 | 88,000 |
| 3..... | 187.2 | 11,000 | 186.5 | 8,700 | 186.0 | 7,200 | 189.5 | 21,400 | 195.8 | 66,200 | 197.8 | 88,000 |
| 4..... | 187.0 | 10,200 | 186.5 | 8,700 | 186.0 | 7,200 | 189.5 | 21,400 | 195.8 | 66,200 | 197.7 | 86,500 |
| 5..... | 186.9 | 9,900 | 186.5 | 8,700 | 186.0 | 7,200 | 189.5 | 21,400 | 195.8 | 66,200 | 197.6 | 85,000 |
| 6..... | 186.9 | 9,900 | 186.4 | 8,400 | 186.1 | 7,800 | 189.5 | 21,400 | 195.8 | 66,200 | 197.6 | 85,000 |
| 7..... | 186.8 | 9,600 | 186.2 | 7,800 | 186.3 | 8,100 | 189.6 | 21,900 | 195.9 | 67,100 | 197.5 | 84,000 |
| 8..... | 186.8 | 9,600 | 186.2 | 7,800 | 186.4 | 8,400 | 189.6 | 21,900 | 196.1 | 69,000 | 197.4 | 83,000 |
| 9..... | 186.7 | 9,300 | 186.2 | 7,800 | 186.5 | 8,700 | 189.7 | 22,400 | 196.3 | 71,000 | 197.5 | 84,000 |
| 10..... | 186.7 | 9,300 | 186.2 | 7,800 | 186.5 | 8,700 | 189.9 | 23,400 | 196.5 | 73,000 | 197.3 | 82,000 |
| 11..... | 186.6 | 9,000 | 186.2 | 7,800 | 186.5 | 8,700 | 190.0 | 24,000 | 196.8 | 76,000 | 197.1 | 80,000 |
| 12..... | 186.6 | 9,000 | 186.3 | 8,100 | 186.6 | 9,000 | 190.3 | 25,800 | 197.0 | 79,000 | 197.0 | 79,000 |
| 13..... | 186.6 | 9,000 | 186.3 | 8,100 | 186.7 | 9,300 | 190.4 | 26,400 | 197.1 | 80,000 | 197.0 | 79,000 |
| 14..... | 186.6 | 9,000 | 186.4 | 8,400 | 186.8 | 9,600 | 190.6 | 27,600 | 197.3 | 82,000 | 197.0 | 79,000 |
| 15..... | 186.6 | 9,000 | 186.4 | 8,400 | 186.9 | 9,900 | 190.8 | 28,800 | 197.4 | 83,000 | 197.0 | 79,000 |
| 16..... | 186.5 | 8,700 | 186.4 | 8,400 | 187.1 | 10,600 | 191.0 | 30,000 | 197.5 | 84,000 | 197.0 | 79,000 |
| 17..... | 186.4 | 8,400 | 186.4 | 8,400 | 187.3 | 11,400 | 191.1 | 30,600 | 197.5 | 84,000 | 196.9 | 77,000 |
| 18..... | 186.4 | 8,400 | 186.4 | 8,400 | 187.4 | 11,800 | 191.4 | 32,400 | 197.5 | 84,000 | 196.9 | 77,000 |
| 19..... | 186.5 | 8,700 | 186.4 | 8,400 | 187.5 | 12,200 | 191.5 | 33,000 | 197.3 | 82,000 | 196.8 | 76,000 |
| 20..... | 186.6 | 9,000 | 186.4 | 8,400 | 187.5 | 12,200 | 191.8 | 34,800 | 196.8 | 76,000 | 196.8 | 76,000 |
| 21..... | 186.6 | 9,000 | 186.4 | 8,400 | 187.5 | 12,200 | 192.0 | 36,200 | 196.2 | 70,000 | 196.9 | 77,000 |
| 22..... | 186.6 | 9,000 | 186.4 | 8,400 | 187.8 | 13,400 | 192.4 | 39,000 | 196.1 | 69,000 | 196.9 | 77,000 |
| 23..... | 186.5 | 8,700 | 186.3 | 8,100 | 188.1 | 14,600 | 192.6 | 40,400 | 196.1 | 69,000 | 196.8 | 76,000 |
| 24..... | 186.5 | 8,700 | 186.0 | 7,200 | 188.6 | 16,900 | 193.0 | 43,200 | 196.1 | 69,000 | 196.7 | 75,000 |
| 25..... | 186.5 | 8,700 | 185.9 | 7,000 | 189.2 | 19,800 | 193.8 | 45,300 | 196.2 | 70,000 | 196.5 | 73,000 |
| 26..... | 186.4 | 8,400 | 185.9 | 7,000 | 189.5 | 21,400 | 193.7 | 48,100 | 196.4 | 72,000 | 196.4 | 72,000 |
| 27..... | 186.5 | 8,700 | 185.9 | 7,000 | 189.5 | 21,400 | 194.1 | 51,200 | 196.5 | 73,000 | 196.3 | 71,000 |
| 28..... | 186.5 | 8,700 | 185.9 | 7,000 | 189.5 | 21,400 | 194.5 | 54,500 | 196.5 | 73,000 | 196.3 | 71,000 |
| 29..... | 186.5 | 8,700 | ..... | ..... | 189.4 | 20,800 | 195.0 | 59,000 | 196.5 | 73,000 | 196.3 | 71,000 |
| 30..... | 186.5 | 8,700 | ..... | ..... | 189.5 | 21,400 | 195.2 | 60,800 | 197.1 | 80,000 | 196.2 | 70,000 |
| 31..... | 186.5 | 8,700 | ..... | ..... | 189.5 | 21,400 | ..... | ..... | 197.5 | 84,000 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

| Day. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 196-0 | 68,000 | 192-6 | 40,400 | 189-4 | 20,800 | 188-1 | 14,600 | 188-8 | 17,900 | 189-0 | 18,800 |
| 2 | 196-0 | 68,000 | 192-4 | 39,000 | 189-4 | 20,800 | 188-1 | 14,600 | 188-7 | 17,400 | 188-7 | 17,400 |
| 3 | 196-0 | 68,000 | 192-3 | 38,300 | 189-3 | 20,300 | 188-1 | 14,600 | 188-7 | 17,400 | 188-5 | 16,400 |
| 4 | 195-9 | 67,100 | 192-1 | 36,900 | 189-1 | 19,300 | 188-1 | 14,600 | 188-7 | 17,400 | 188-5 | 16,400 |
| 5 | 195-7 | 65,300 | 192-0 | 35,200 | 189-0 | 18,800 | 188-2 | 15,000 | 188-7 | 17,400 | 188-5 | 16,400 |
| 6 | 195-5 | 63,500 | 191-9 | 35,500 | 188-9 | 18,300 | 188-2 | 15,000 | 188-7 | 17,400 | 188-4 | 15,900 |
| 7 | 195-4 | 62,600 | 191-8 | 34,800 | 188-8 | 17,900 | 188-3 | 15,400 | 188-7 | 17,400 | 188-4 | 15,900 |
| 8 | 195-4 | 62,600 | 191-6 | 33,600 | 188-6 | 16,900 | 188-3 | 15,400 | 188-7 | 17,400 | 188-3 | 15,400 |
| 9 | 195-3 | 61,700 | 191-5 | 33,000 | 188-6 | 16,900 | 188-5 | 16,400 | 188-8 | 17,900 | 188-1 | 14,600 |
| 10 | 195-2 | 60,800 | 191-5 | 33,000 | 188-5 | 16,400 | 188-6 | 16,900 | 188-8 | 17,900 | 188-1 | 14,600 |
| 11 | 195-1 | 59,900 | 191-4 | 32,400 | 188-5 | 16,400 | 188-6 | 16,900 | 188-9 | 18,300 | 188-1 | 14,600 |
| 12 | 195-0 | 59,000 | 191-3 | 31,800 | 188-4 | 15,900 | 188-7 | 17,400 | 188-9 | 18,300 | 188-5 | 16,400 |
| 13 | 194-9 | 58,100 | 191-2 | 31,200 | 188-4 | 15,900 | 188-7 | 17,400 | 188-9 | 18,300 | 188-4 | 15,900 |
| 14 | 194-8 | 57,200 | 191-2 | 31,200 | 188-4 | 15,900 | 188-7 | 17,400 | 188-9 | 18,300 | 188-3 | 15,400 |
| 15 | 194-6 | 55,400 | 191-1 | 30,600 | 188-3 | 15,400 | 188-8 | 17,900 | 189-0 | 18,800 | 188-2 | 15,000 |
| 16 | 194-5 | 54,500 | 191-1 | 30,600 | 188-3 | 15,400 | 188-9 | 18,300 | 189-0 | 18,800 | 188-1 | 14,600 |
| 17 | 194-4 | 53,600 | 191-0 | 30,000 | 188-2 | 15,000 | 188-9 | 18,300 | 189-1 | 19,300 | 188-0 | 14,200 |
| 18 | 194-3 | 52,800 | 190-9 | 29,400 | 188-1 | 14,600 | 188-8 | 17,900 | 189-2 | 19,800 | 188-0 | 14,200 |
| 19 | 194-2 | 52,000 | 190-7 | 28,200 | 188-0 | 14,200 | 188-9 | 18,300 | 189-2 | 19,800 | 188-0 | 14,200 |
| 20 | 194-1 | 51,200 | 190-6 | 27,600 | 188-0 | 14,200 | 189-0 | 18,800 | 189-1 | 19,300 | 188-0 | 14,200 |
| 21 | 194-1 | 51,200 | 190-5 | 27,000 | 188-0 | 14,200 | 189-1 | 19,300 | 189-0 | 18,800 | 187-8 | 13,400 |
| 22 | 194-1 | 51,200 | 190-4 | 26,400 | 188-0 | 14,200 | 188-9 | 18,300 | 189-0 | 18,800 | 187-7 | 13,000 |
| 23 | 194-0 | 50,400 | 190-4 | 26,400 | 188-0 | 14,200 | 188-9 | 18,300 | 189-1 | 19,300 | 187-6 | 12,600 |
| 24 | 193-9 | 49,600 | 190-2 | 25,200 | 188-1 | 14,600 | 188-9 | 18,300 | 189-1 | 19,300 | 187-6 | 12,600 |
| 25 | 193-6 | 47,400 | 190-1 | 24,600 | 188-2 | 15,000 | 188-9 | 18,300 | 189-2 | 19,800 | 187-5 | 12,200 |
| 26 | 193-5 | 46,700 | 190-0 | 24,000 | 188-2 | 15,000 | 188-9 | 18,300 | 189-2 | 19,800 | 187-5 | 12,200 |
| 27 | 193-5 | 46,700 | 189-9 | 23,400 | 188-1 | 14,600 | 188-9 | 18,300 | 189-2 | 19,800 | 187-5 | 12,200 |
| 28 | 193-3 | 45,300 | 189-8 | 22,900 | 188-1 | 14,600 | 188-9 | 18,300 | 189-2 | 19,800 | 187-5 | 12,200 |
| 29 | 193-0 | 43,200 | 189-7 | 22,400 | 188-1 | 14,600 | 188-9 | 18,300 | 189-2 | 19,800 | 187-5 | 12,200 |
| 30 | 192-9 | 42,500 | 189-6 | 21,900 | 188-1 | 14,600 | 188-9 | 18,300 | 189-2 | 19,800 | 187-5 | 12,200 |
| 31 | 192-7 | 41,100 | 189-5 | 21,400 | | | 188-9 | 18,300 | | | 187-5 | 12,200 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1910.

(Drainage area, 17,800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 12,200 | 8,490 | 9,240 | 0-52 | 0-60 | 568,000 |
| February | 8,700 | 7,060 | 8,070 | 0-45 | 0-47 | 448,000 |
| March | 21,400 | 7,200 | 12,500 | 0-70 | 0-81 | 769,000 |
| April | 60,800 | 21,400 | 32,900 | 1-85 | 2-06 | 1,960,000 |
| May | 84,000 | 63,500 | 73,800 | 4-15 | 4-78 | 4,540,000 |
| June | 88,000 | 70,060 | 78,900 | 4-43 | 4-94 | 4,695,000 |
| July | 68,000 | 41,100 | 55,400 | 3-11 | 3-58 | 3,410,000 |
| August | 40,400 | 21,400 | 30,000 | 1-68 | 1-94 | 1,840,000 |
| September | 20,800 | 14,200 | 16,200 | 0-91 | 1-02 | 964,000 |
| October | 19,300 | 14,600 | 17,200 | 0-97 | 1-12 | 1,060,000 |
| November | 19,800 | 14,600 | 18,600 | 1-04 | 1-16 | 1,100,000 |
| December | 18,800 | 12,200 | 14,400 | 0-81 | 0-93 | 885,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1911.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 187.4 | 11,800 | 186.1 | 7,500 | 185.5 | 6,300 | 188.0 | 14,200 | 191.3 | 31,860 | 194.7 | 56,300 |
| 2 | 187.3 | 11,400 | 186.1 | 7,500 | 185.5 | 6,300 | 188.0 | 14,200 | 191.4 | 32,400 | 194.9 | 58,100 |
| 3 | 187.1 | 10,600 | 186.1 | 7,500 | 185.5 | 6,300 | 188.1 | 14,600 | 191.6 | 33,600 | 195.2 | 60,800 |
| 4 | 187.0 | 10,200 | 186.1 | 7,500 | 185.5 | 6,300 | 188.2 | 15,000 | 191.8 | 34,800 | 195.4 | 62,600 |
| 5 | 186.9 | 9,900 | 186.1 | 7,500 | 185.5 | 6,300 | 188.2 | 15,000 | 192.0 | 36,200 | 195.6 | 64,400 |
| 6 | 186.8 | 9,600 | 186.1 | 7,500 | 185.5 | 6,300 | 188.3 | 15,400 | 192.4 | 39,000 | 195.8 | 66,200 |
| 7 | 186.8 | 9,600 | 186.1 | 7,500 | 185.5 | 6,300 | 188.3 | 15,400 | 192.7 | 41,100 | 196.0 | 68,000 |
| 8 | 186.7 | 9,300 | 186.1 | 7,500 | 185.5 | 6,300 | 188.4 | 15,900 | 193.0 | 43,200 | 196.2 | 70,000 |
| 9 | 186.7 | 9,300 | 186.1 | 7,500 | 185.6 | 6,400 | 188.4 | 15,900 | 193.3 | 45,300 | 196.3 | 71,000 |
| 10 | 186.7 | 9,300 | 186.1 | 7,500 | 185.6 | 6,400 | 188.4 | 15,900 | 193.5 | 46,700 | 196.3 | 75,000 |
| 11 | 186.6 | 9,000 | 186.2 | 7,800 | 185.7 | 6,600 | 188.4 | 15,900 | 193.6 | 47,400 | 196.6 | 74,000 |
| 12 | 186.6 | 9,000 | 186.2 | 7,800 | 185.8 | 6,800 | 188.4 | 15,900 | 193.7 | 48,100 | 196.9 | 77,000 |
| 13 | 186.6 | 9,000 | 186.2 | 7,800 | 185.8 | 6,800 | 188.5 | 16,400 | 193.8 | 48,800 | 197.1 | 80,000 |
| 14 | 186.4 | 8,400 | 186.2 | 7,800 | 185.8 | 6,800 | 188.5 | 16,400 | 193.8 | 48,800 | 197.4 | 83,000 |
| 15 | 186.3 | 8,100 | 186.2 | 7,800 | 185.9 | 7,000 | 188.5 | 16,400 | 193.9 | 49,600 | 197.6 | 85,000 |
| 16 | 186.1 | 7,500 | 186.2 | 7,800 | 185.9 | 7,000 | 188.5 | 16,400 | 194.0 | 50,400 | 197.9 | 89,500 |
| 17 | 186.0 | 7,200 | 186.2 | 7,800 | 186.0 | 7,200 | 188.5 | 16,400 | 194.0 | 50,400 | 198.1 | 92,000 |
| 18 | 185.9 | 7,000 | 186.3 | 8,100 | 186.0 | 7,200 | 188.5 | 16,400 | 194.1 | 51,200 | 198.3 | 94,000 |
| 19 | 185.9 | 7,000 | 186.3 | 8,100 | 186.1 | 7,500 | 188.5 | 16,400 | 194.3 | 52,800 | 198.5 | 96,500 |
| 20 | 186.0 | 7,200 | 186.3 | 8,100 | 186.3 | 8,100 | 188.5 | 16,400 | 194.5 | 54,500 | 198.7 | 99,500 |
| 21 | 186.1 | 7,500 | 186.3 | 8,100 | 186.4 | 8,400 | 188.6 | 16,900 | 194.6 | 55,400 | 198.8 | 101,000 |
| 22 | 186.3 | 8,100 | 186.2 | 7,800 | 186.5 | 8,700 | 188.7 | 17,400 | 194.7 | 56,300 | 199.0 | 104,000 |
| 23 | 186.2 | 7,800 | 185.8 | 6,800 | 186.6 | 9,000 | 188.9 | 18,300 | 194.7 | 56,300 | 199.0 | 104,000 |
| 24 | 186.2 | 7,800 | 185.7 | 6,600 | 186.7 | 9,300 | 189.0 | 18,800 | 194.6 | 55,400 | 199.0 | 104,000 |
| 25 | 186.2 | 7,800 | 185.7 | 6,600 | 186.8 | 9,600 | 189.5 | 21,400 | 194.6 | 55,400 | 199.0 | 104,000 |
| 26 | 186.4 | 8,400 | 185.7 | 6,600 | 187.0 | 10,200 | 189.8 | 22,900 | 194.5 | 54,500 | 199.0 | 104,000 |
| 27 | 186.4 | 8,400 | 185.7 | 6,600 | 187.2 | 11,000 | 190.2 | 25,200 | 194.5 | 54,500 | 199.0 | 104,000 |
| 28 | 186.3 | 8,100 | 185.6 | 6,400 | 187.4 | 11,800 | 190.5 | 27,000 | 194.5 | 54,500 | 199.0 | 104,000 |
| 29 | 186.4 | 8,400 | ..... | ..... | 187.6 | 12,600 | 190.9 | 29,400 | 194.5 | 54,500 | 199.0 | 104,000 |
| 30 | 186.4 | 8,400 | ..... | ..... | 187.7 | 13,000 | 191.2 | 31,200 | 194.5 | 54,500 | 199.0 | 104,000 |
| 31 | 186.2 | 7,800 | ..... | ..... | 187.9 | 13,800 | ..... | ..... | 194.5 | 54,500 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1911.—*Con.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 198-9 | 102,000 | 194-3 | 52,800 | 190-5 | 27,000 | 188-7 | 17,400 | 187-2 | 11,000 | 187-0 | 10,200 |
| 2. | 198-8 | 101,000 | 194-2 | 52,000 | 190-4 | 26,400 | 188-7 | 17,400 | 187-1 | 10,800 | 186-9 | 9,900 |
| 3. | 198-7 | 99,500 | 194-0 | 50,400 | 190-4 | 26,400 | 188-6 | 16,900 | 187-1 | 10,600 | 186-7 | 9,300 |
| 4. | 198-5 | 96,500 | 193-7 | 48,100 | 190-4 | 26,400 | 188-5 | 16,400 | 187-0 | 10,200 | 186-6 | 9,000 |
| 5. | 198-4 | 95,000 | 193-6 | 47,400 | 190-4 | 26,400 | 188-5 | 16,400 | 187-0 | 10,200 | 186-5 | 8,700 |
| 6. | 198-2 | 93,000 | 193-5 | 46,700 | 190-3 | 25,800 | 188-5 | 16,400 | 187-0 | 10,200 | 186-5 | 8,700 |
| 7. | 198-0 | 91,000 | 193-4 | 46,000 | 190-2 | 25,200 | 188-4 | 15,900 | 187-0 | 10,200 | 186-5 | 8,700 |
| 8. | 197-8 | 88,000 | 193-3 | 45,300 | 190-2 | 25,200 | 188-3 | 15,400 | 187-0 | 10,200 | 186-4 | 8,400 |
| 9. | 197-7 | 86,000 | 193-1 | 43,900 | 190-1 | 24,600 | 188-3 | 15,400 | 187-0 | 10,200 | 186-4 | 8,400 |
| 10. | 197-5 | 84,000 | 193-0 | 43,200 | 190-0 | 24,000 | 188-2 | 15,000 | 186-9 | 9,900 | 186-4 | 8,400 |
| 11. | 197-3 | 82,000 | 193-0 | 43,200 | 189-9 | 23,400 | 188-2 | 15,000 | 186-9 | 9,900 | 186-3 | 8,100 |
| 12. | 197-2 | 81,000 | 193-0 | 43,200 | 189-9 | 23,400 | 188-2 | 15,000 | 186-8 | 9,600 | 186-3 | 8,100 |
| 13. | 197-1 | 80,000 | 192-8 | 41,800 | 189-8 | 22,900 | 188-2 | 15,000 | 186-7 | 9,300 | 186-3 | 8,100 |
| 14. | 197-0 | 79,000 | 192-7 | 41,100 | 189-7 | 22,400 | 188-2 | 15,000 | 186-5 | 8,700 | 186-3 | 8,100 |
| 15. | 197-0 | 79,000 | 192-5 | 39,700 | 189-7 | 22,400 | 188-0 | 14,200 | 186-4 | 8,400 | 186-3 | 8,100 |
| 16. | 196-9 | 77,000 | 192-4 | 39,000 | 189-6 | 21,900 | 187-9 | 13,800 | 186-4 | 8,400 | 186-3 | 8,100 |
| 17. | 196-7 | 75,000 | 192-2 | 37,600 | 189-6 | 21,900 | 187-8 | 13,400 | 186-4 | 8,400 | 186-3 | 8,100 |
| 18. | 196-6 | 74,000 | 192-1 | 36,900 | 189-5 | 21,400 | 187-8 | 13,400 | 186-4 | 8,400 | 186-3 | 8,100 |
| 19. | 196-5 | 73,000 | 191-9 | 35,500 | 189-5 | 21,400 | 187-7 | 13,000 | 186-5 | 8,700 | 186-3 | 8,100 |
| 20. | 196-3 | 71,000 | 191-7 | 34,200 | 189-4 | 20,800 | 187-7 | 13,000 | 186-5 | 8,700 | 186-2 | 7,800 |
| 21. | 196-1 | 69,000 | 191-6 | 33,600 | 189-4 | 20,800 | 187-6 | 12,600 | 186-5 | 8,700 | 186-2 | 7,800 |
| 22. | 195-9 | 67,100 | 191-5 | 33,000 | 189-3 | 20,300 | 187-6 | 12,600 | 186-6 | 9,000 | 186-1 | 7,500 |
| 23. | 195-7 | 65,300 | 191-4 | 32,400 | 189-3 | 20,300 | 187-6 | 12,600 | 186-7 | 9,300 | 186-1 | 7,500 |
| 24. | 195-6 | 64,400 | 191-3 | 31,800 | 189-2 | 19,800 | 187-5 | 12,200 | 186-7 | 9,300 | 186-1 | 7,500 |
| 25. | 195-5 | 63,500 | 191-2 | 31,200 | 189-2 | 19,800 | 187-5 | 12,200 | 186-8 | 9,600 | 186-0 | 7,200 |
| 26. | 195-3 | 61,700 | 191-1 | 30,600 | 189-0 | 18,800 | 187-5 | 12,200 | 186-9 | 9,900 | 186-0 | 7,200 |
| 27. | 195-2 | 60,800 | 190-9 | 29,400 | 188-9 | 18,300 | 187-5 | 12,200 | 187-0 | 10,200 | 186-0 | 7,200 |
| 28. | 195-0 | 59,000 | 190-8 | 28,800 | 188-9 | 18,300 | 187-5 | 12,200 | 187-0 | 10,200 | 186-0 | 7,200 |
| 29. | 194-9 | 58,100 | 190-7 | 28,200 | 188-8 | 17,900 | 187-4 | 11,800 | 187-0 | 10,200 | 186-0 | 7,200 |
| 30. | 194-7 | 56,300 | 190-6 | 27,600 | 188-8 | 17,900 | 187-3 | 11,400 | 187-0 | 10,200 | 186-0 | 7,200 |
| 31. | 194-5 | 54,500 | 190-5 | 27,000 | | | 187-2 | 11,000 | | | 185-8 | 6,800 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1911.

(Drainage area, 17,800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January..... | 11,800 | 7,000 | 8,670 | 0-49 | 0-56 | 533,000 |
| February..... | 8,100 | 6,400 | 7,480 | 0-42 | 0-44 | 415,000 |
| March..... | 13,800 | 6,300 | 8,120 | 0-46 | 0-53 | 499,000 |
| April..... | 31,200 | 14,200 | 18,100 | 1-01 | 1-13 | 1,080,000 |
| May..... | 56,300 | 31,800 | 48,100 | 2-70 | 3-11 | 2,960,000 |
| June..... | 104,000 | 56,300 | 85,300 | 4-78 | 5-33 | 5,080,000 |
| July..... | 102,000 | 54,500 | 77,000 | 4-32 | 4-98 | 4,730,000 |
| August..... | 52,800 | 27,000 | 38,800 | 2-18 | 2-51 | 1,540,000 |
| September..... | 27,000 | 17,900 | 22,400 | 1-26 | 1-41 | 1,330,000 |
| October..... | 17,400 | 11,000 | 14,100 | 0-79 | 0-91 | 867,000 |
| November..... | 11,000 | 8,400 | 9,610 | 0-54 | 0-60 | 572,000 |
| December..... | 10,200 | 6,800 | 8,090 | 0-45 | 0-52 | 497,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1912.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 185.8 | 6,800 | 185.0 | 5,800 | 185.4 | 6,200 | 185.2 | 6,000 | 189.8 | 22,900 | 195.0 | 59,000 |
| 2 | 185.8 | 6,800 | 185.0 | 5,800 | 185.3 | 6,100 | 185.2 | 6,000 | 189.9 | 23,400 | 194.9 | 58,100 |
| 3 | 185.8 | 6,800 | 185.0 | 5,800 | 185.3 | 6,100 | 185.5 | 6,300 | 190.0 | 24,000 | 194.9 | 58,100 |
| 4 | 185.8 | 6,800 | 185.2 | 6,000 | 185.3 | 6,100 | 185.5 | 6,300 | 190.0 | 24,000 | 195.0 | 59,000 |
| 5 | 185.8 | 6,800 | 185.3 | 6,100 | 185.1 | 5,900 | 185.6 | 6,400 | 190.0 | 24,000 | 194.8 | 57,200 |
| 6 | 185.8 | 6,800 | 185.1 | 5,900 | 185.0 | 5,800 | 185.9 | 7,000 | 190.1 | 24,600 | 194.8 | 57,200 |
| 7 | 185.8 | 6,800 | 185.1 | 5,900 | 185.2 | 6,000 | 186.1 | 7,500 | 190.1 | 24,600 | 194.8 | 57,200 |
| 8 | 186.0 | 7,200 | 185.1 | 5,900 | 185.0 | 5,800 | 186.1 | 7,500 | 190.2 | 25,200 | 194.7 | 56,300 |
| 9 | 184.9 | 5,700 | 185.1 | 5,900 | 185.0 | 5,800 | 186.5 | 8,700 | 190.5 | 27,000 | 194.7 | 56,300 |
| 10 | 185.0 | 5,800 | 185.1 | 5,900 | 185.0 | 5,800 | 186.5 | 8,700 | 190.7 | 28,200 | 194.7 | 56,300 |
| 11 | 185.0 | 5,800 | 185.3 | 6,100 | 185.0 | 5,800 | 186.9 | 8,900 | 192.0 | 30,000 | 194.5 | 54,500 |
| 12 | 185.0 | 5,800 | 185.3 | 6,100 | 185.0 | 5,800 | 187.1 | 10,600 | 191.3 | 31,800 | 194.5 | 54,500 |
| 13 | 185.0 | 5,800 | 185.0 | 5,800 | 185.0 | 5,800 | 187.1 | 10,600 | 191.5 | 33,000 | 194.7 | 56,300 |
| 14 | 185.0 | 5,800 | 185.0 | 5,800 | 185.0 | 5,800 | 187.6 | 12,600 | 193.0 | 36,200 | 194.8 | 57,200 |
| 15 | 185.0 | 5,800 | 185.0 | 5,800 | 185.0 | 5,800 | 187.9 | 13,800 | 192.3 | 38,300 | 194.9 | 56,100 |
| 16 | 185.0 | 5,800 | 184.9 | 5,700 | 185.0 | 5,800 | 188.0 | 14,200 | 192.6 | 40,400 | 195.0 | 59,000 |
| 17 | 185.0 | 5,800 | 185.1 | 5,900 | 185.0 | 5,800 | 188.2 | 15,000 | 193.0 | 43,200 | 195.0 | 59,000 |
| 18 | 185.0 | 5,800 | 184.9 | 5,700 | 185.0 | 5,800 | 188.4 | 15,900 | 193.3 | 45,300 | 195.1 | 59,000 |
| 19 | 185.0 | 5,800 | 184.9 | 5,700 | 184.9 | 5,700 | 188.7 | 17,400 | 193.5 | 46,700 | 195.1 | 59,000 |
| 20 | 185.0 | 5,800 | 184.9 | 5,700 | 185.0 | 5,800 | 189.0 | 18,300 | 193.7 | 48,100 | 195.2 | 60,800 |
| 21 | 185.0 | 5,800 | 185.0 | 5,800 | 185.0 | 5,800 | 189.1 | 19,300 | 194.0 | 50,400 | 195.2 | 60,800 |
| 22 | 185.0 | 5,800 | 185.5 | 6,300 | 184.9 | 5,700 | 189.2 | 19,800 | 194.2 | 52,000 | 175.2 | 60,800 |
| 23 | 185.0 | 5,800 | 185.5 | 6,300 | 185.0 | 5,800 | 189.3 | 20,300 | 194.4 | 53,600 | 195.3 | 61,700 |
| 24 | 185.0 | 5,800 | 185.4 | 6,200 | 184.9 | 5,700 | 189.4 | 20,800 | 194.5 | 54,500 | 195.4 | 62,600 |
| 25 | 185.0 | 5,800 | 185.0 | 5,800 | 185.0 | 5,800 | 189.4 | 20,800 | 194.6 | 55,400 | 195.5 | 63,500 |
| 26 | 185.0 | 5,800 | 184.9 | 5,700 | 184.8 | 5,600 | 189.4 | 20,800 | 194.7 | 56,300 | 195.5 | 63,500 |
| 27 | 185.0 | 5,800 | 184.9 | 5,700 | 184.8 | 5,600 | 189.6 | 21,900 | 194.7 | 56,300 | 195.5 | 63,500 |
| 28 | 185.0 | 5,800 | 184.9 | 5,700 | 184.9 | 5,700 | 189.6 | 21,900 | 194.8 | 57,200 | 195.5 | 63,500 |
| 29 | 185.0 | 5,800 | 184.9 | 5,700 | 184.9 | 5,700 | 189.7 | 22,400 | 195.0 | 59,000 | 195.4 | 62,600 |
| 30 | 185.0 | 5,800 | ..... | ..... | 184.9 | 5,700 | 189.7 | 22,400 | 195.0 | 59,000 | 195.0 | 59,000 |
| 31 | 185.0 | 5,800 | ..... | ..... | 184.9 | 5,700 | ..... | ..... | 195.1 | 59,000 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1912.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 195-0 | 59,000 | 192-9 | 42,500 | 190-4 | 26,400 | 188-5 | 16,400 | 187-6 | 12,600 | 187-5 | 12,200 |
| 2 | 195-0 | 59,000 | 192-8 | 41,800 | 190-3 | 25,800 | 188-5 | 16,400 | 187-5 | 12,200 | 187-4 | 11,800 |
| 3 | 195-0 | 59,000 | 192-7 | 41,100 | 190-2 | 25,200 | 188-4 | 15,900 | 187-4 | 11,800 | 187-4 | 11,800 |
| 4 | 194-5 | 54,600 | 192-6 | 40,400 | 190-1 | 24,600 | 188-2 | 15,000 | 187-3 | 11,400 | 187-3 | 11,400 |
| 5 | 194-5 | 54,500 | 192-5 | 39,700 | 190-0 | 24,000 | 188-1 | 14,600 | 187-3 | 11,400 | 187-2 | 11,000 |
| 6 | 194-4 | 53,600 | 192-4 | 39,000 | 190-0 | 24,000 | 188-1 | 14,600 | 187-3 | 11,400 | 187-1 | 10,600 |
| 7 | 194-3 | 62,800 | 192-4 | 39,000 | 190-0 | 24,000 | 188-1 | 14,600 | 187-3 | 11,400 | 187-2 | 11,000 |
| 8 | 194-0 | 50,400 | 192-2 | 37,600 | 190-0 | 24,000 | 188-0 | 14,200 | 187-3 | 11,400 | 187-2 | 11,000 |
| 9 | 194-0 | 50,400 | 192-1 | 36,900 | 190-0 | 24,000 | 188-0 | 14,200 | 187-4 | 11,800 | 187-1 | 10,600 |
| 10 | 194-0 | 50,400 | 192-0 | 35,200 | 190-0 | 24,000 | 188-0 | 14,200 | 187-5 | 12,200 | 187-1 | 10,600 |
| 11 | 194-0 | 50,400 | 191-9 | 35,500 | 189-7 | 22,400 | 188-0 | 14,200 | 187-5 | 12,200 | 187-1 | 10,600 |
| 12 | 193-8 | 48,800 | 191-9 | 35,500 | 189-8 | 22,900 | 187-9 | 13,800 | 187-5 | 12,200 | 187-1 | 10,600 |
| 13 | 193-8 | 48,800 | 191-9 | 35,500 | 189-7 | 22,400 | 187-9 | 13,800 | 187-5 | 12,200 | 187-0 | 10,200 |
| 14 | 193-9 | 49,600 | 191-6 | 33,600 | 189-8 | 22,900 | 187-9 | 13,800 | 187-6 | 12,600 | 187-0 | 10,200 |
| 15 | 193-9 | 49,600 | 191-6 | 33,600 | 189-8 | 22,900 | 187-9 | 13,800 | 187-7 | 13,000 | 187-0 | 10,200 |
| 16 | 193-9 | 49,600 | 191-5 | 33,000 | 189-7 | 22,400 | 187-7 | 13,000 | 187-8 | 13,400 | 186-9 | 9,900 |
| 17 | 193-9 | 49,600 | 191-4 | 32,400 | 189-6 | 21,900 | 187-7 | 13,000 | 188-0 | 14,200 | 186-9 | 9,900 |
| 18 | 193-9 | 49,600 | 191-3 | 31,800 | 189-5 | 21,400 | 187-7 | 13,000 | 188-0 | 14,200 | 186-8 | 9,600 |
| 19 | 193-7 | 48,100 | 191-1 | 30,600 | 189-3 | 20,300 | 187-7 | 13,000 | 188-0 | 14,200 | 186-8 | 9,600 |
| 20 | 193-7 | 48,100 | 191-0 | 30,000 | 189-3 | 20,300 | 187-7 | 13,000 | 188-0 | 14,200 | 186-7 | 9,300 |
| 21 | 193-7 | 48,100 | 191-0 | 30,000 | 189-3 | 20,300 | 187-6 | 13,400 | 187-9 | 13,800 | 186-7 | 9,300 |
| 22 | 193-5 | 46,700 | 191-0 | 30,000 | 189-1 | 19,300 | 187-8 | 13,400 | 187-9 | 13,800 | 186-7 | 9,300 |
| 23 | 193-6 | 46,700 | 191-0 | 30,000 | 189-0 | 18,800 | 187-7 | 13,000 | 188-0 | 14,200 | 186-9 | 9,900 |
| 24 | 193-5 | 46,700 | 191-0 | 30,000 | 189-0 | 18,800 | 187-7 | 13,000 | 188-0 | 14,200 | 186-8 | 9,600 |
| 25 | 193-4 | 46,000 | 191-0 | 30,000 | 189-0 | 18,800 | 187-8 | 13,400 | 188-9 | 13,800 | 186-8 | 9,500 |
| 26 | 193-1 | 43,900 | 190-8 | 25,000 | 189-0 | 18,800 | 187-7 | 13,000 | 188-9 | 13,800 | 186-7 | 9,300 |
| 27 | 193-0 | 43,200 | 190-6 | 27,600 | 188-8 | 17,900 | 187-7 | 13,000 | 188-8 | 13,400 | 186-6 | 9,000 |
| 28 | 192-9 | 42,500 | 190-6 | 27,600 | 188-8 | 17,900 | 187-7 | 13,000 | 188-8 | 13,400 | 186-7 | 9,300 |
| 29 | 193-0 | 43,200 | 190-6 | 27,600 | 189-8 | 17,900 | 187-7 | 13,000 | 188-7 | 13,000 | 186-7 | 9,300 |
| 30 | 192-9 | 42,500 | 190-6 | 27,600 | 188-6 | 16,900 | 187-7 | 13,000 | 188-5 | 12,200 | 186-3 | 8,100 |
| 31 | 192-9 | 42,500 | 190-6 | 27,600 | ..... | ..... | 187-7 | 13,000 | ..... | ..... | 186-1 | 7,500 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1912.

(Drainage area, 17,800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|--------|--------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | f Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| January | 7,200 | 5,700 | 6,070 | 0-34 | 0-39 | 373,000 |
| February | 6,300 | 5,700 | 5,880 | 0-33 | 0-36 | 338,000 |
| March | 6,200 | 5,600 | 5,820 | 0-33 | 0-38 | 358,000 |
| April | 22,400 | 6,000 | 14,000 | 0-79 | 0-88 | 833,000 |
| May | 59,900 | 22,900 | 40,500 | 2-27 | 2-62 | 2,490,000 |
| June | 63,500 | 54,500 | 59,200 | 3-32 | 3-70 | 3,520,000 |
| July | 59,000 | 42,500 | 49,300 | 2-77 | 3-19 | 3,030,000 |
| August | 42,500 | 27,600 | 33,600 | 1-88 | 2-17 | 2,070,000 |
| September | 26,400 | 16,900 | 21,700 | 1-22 | 1-36 | 1,290,000 |
| October | 16,400 | 13,000 | 13,800 | 0-78 | 0-90 | 848,000 |
| November | 14,200 | 11,400 | 12,800 | 0-71 | 0-79 | 762,000 |
| December | 12,200 | 7,500 | 10,100 | 0-57 | 0-66 | 621,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River at Bonnington Falls, for 1913.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 186-3 | 8,100 | 185-6 | 6,400 | 185-5 | 6,300 | 186-1 | 7,500 | 191-5 | 33,000 | 197-5 | 84,000 |
| 2..... | 186-3 | 8,100 | 185-9 | 7,000 | 185-8 | 6,800 | 186-1 | 7,500 | 191-5 | 33,000 | 197-9 | 89,500 |
| 3..... | 186-3 | 8,100 | 185-9 | 7,000 | 185-4 | 6,200 | 186-1 | 7,500 | 191-7 | 34,200 | 198-5 | 96,500 |
| 4..... | 186-6 | 9,000 | 185-8 | 6,800 | 185-5 | 6,300 | 186-1 | 7,500 | 191-6 | 33,600 | 199-0 | 104,000 |
| 5..... | 186-5 | 8,700 | 185-7 | 6,600 | 185-5 | 6,300 | 185-9 | 7,000 | 191-5 | 33,000 | 199-2 | 107,000 |
| 6..... | 186-4 | 8,400 | 185-6 | 6,400 | 185-5 | 6,300 | 186-2 | 7,800 | 191-5 | 33,000 | 199-4 | 109,000 |
| 7..... | 186-3 | 8,100 | 185-7 | 6,600 | 185-5 | 6,300 | 186-0 | 7,200 | 191-4 | 32,400 | 199-8 | 114,000 |
| 8..... | 186-2 | 7,800 | 185-6 | 6,400 | 185-4 | 6,200 | 186-0 | 7,200 | 191-4 | 32,400 | 200-1 | 119,000 |
| 9..... | 186-2 | 7,800 | 185-8 | 6,800 | 185-6 | 6,400 | 186-2 | 7,800 | 191-5 | 33,000 | 200-5 | 125,000 |
| 10..... | 186-2 | 7,800 | 185-7 | 6,600 | 185-6 | 6,400 | 186-2 | 7,800 | 191-7 | 34,200 | 200-6 | 126,000 |
| 11..... | 186-2 | 7,800 | 185-6 | 6,400 | 185-6 | 6,400 | 186-3 | 8,100 | 192-0 | 36,200 | 200-7 | 128,000 |
| 12..... | 186-3 | 8,100 | 185-6 | 6,400 | 185-6 | 6,400 | 186-4 | 8,400 | 192-3 | 38,300 | 200-8 | 130,000 |
| 13..... | 186-2 | 7,800 | 185-5 | 6,300 | 185-6 | 6,400 | 186-8 | 9,600 | 192-3 | 38,300 | 200-7 | 128,000 |
| 14..... | 186-0 | 7,200 | 185-3 | 6,100 | 185-6 | 6,400 | 187-0 | 10,200 | 192-6 | 40,400 | 200-8 | 130,000 |
| 15..... | 186-0 | 7,200 | 185-3 | 6,100 | 185-7 | 6,600 | 187-2 | 11,000 | 192-7 | 41,100 | 201-3 | 137,000 |
| 16..... | 186-0 | 7,200 | 185-6 | 6,400 | 185-7 | 6,600 | 187-6 | 12,600 | 192-8 | 41,800 | 201-0 | 132,000 |
| 17..... | 186-0 | 7,200 | 185-6 | 6,400 | 185-6 | 6,400 | 187-9 | 13,800 | 193-0 | 43,200 | 200-0 | 118,000 |
| 18..... | 185-8 | 6,800 | 185-6 | 6,400 | 185-8 | 6,800 | 188-3 | 15,400 | 193-2 | 44,600 | 200-4 | 124,000 |
| 19..... | 186-0 | 7,200 | 185-6 | 6,400 | 185-1 | 5,900 | 188-7 | 17,400 | 193-3 | 45,300 | 200-3 | 122,000 |
| 20..... | 185-7 | 6,600 | 185-7 | 6,600 | 185-8 | 6,800 | 189-2 | 19,800 | 193-4 | 46,000 | 200-2 | 120,000 |
| 21..... | 185-8 | 6,800 | 185-8 | 6,800 | 185-8 | 6,800 | 189-5 | 21,400 | 193-3 | 45,300 | 200-1 | 119,000 |
| 22..... | 185-8 | 6,800 | 185-5 | 6,300 | 185-7 | 6,600 | 189-8 | 22,900 | 193-4 | 46,000 | 200-0 | 118,000 |
| 23..... | 185-7 | 6,600 | 185-8 | 6,800 | 186-0 | 7,200 | 190-0 | 24,000 | 193-5 | 46,700 | 199-7 | 113,000 |
| 24..... | 185-8 | 6,800 | 185-6 | 6,400 | 185-8 | 6,800 | 189-4 | 20,800 | 193-8 | 48,800 | 199-3 | 108,000 |
| 25..... | 185-8 | 6,800 | 185-6 | 6,400 | 185-9 | 7,000 | 190-6 | 27,600 | 194-2 | 52,000 | 199-4 | 109,000 |
| 26..... | 185-8 | 6,800 | 185-6 | 6,400 | 186-0 | 7,200 | 190-8 | 28,800 | 194-4 | 53,600 | 199-2 | 107,000 |
| 27..... | 185-8 | 6,800 | 185-5 | 6,300 | 185-8 | 6,800 | 191-2 | 31,200 | 194-9 | 58,100 | 199-1 | 106,000 |
| 28..... | 186-3 | 8,100 | 185-4 | 6,200 | 185-9 | 7,000 | 191-3 | 31,800 | 195-5 | 63,500 | 198-8 | 101,000 |
| 29..... | 186-0 | 7,200 | ..... | ..... | 185-9 | 7,000 | 191-4 | 32,400 | 196-0 | 68,000 | 198-7 | 99,500 |
| 30..... | 186-0 | 7,200 | ..... | ..... | 186-0 | 7,200 | 191-4 | 32,400 | 196-5 | 73,000 | 198-5 | 96,500 |
| 31..... | 186-0 | 7,200 | ..... | ..... | 186-0 | 7,200 | ..... | ..... | 197-1 | 80,000 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River at Bonnington Falls, for 1913.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 198-3 | 94,000 | 194-0 | 50,400 | 191-2 | 31,200 | 189-3 | 20,300 | 188-0 | 14,200 | 181-7 | 13,000 |
| 2 | 198-2 | 93,000 | 193-8 | 48,800 | 191-1 | 30,600 | 189-2 | 19,800 | 188-2 | 15,000 | 187-7 | 13,000 |
| 3 | 198-1 | 92,000 | 193-7 | 48,100 | 190-9 | 29,400 | 189-2 | 19,800 | 188-0 | 14,200 | 187-7 | 13,000 |
| 4 | 197-9 | 89,500 | 193-3 | 45,300 | 190-9 | 29,400 | 189-1 | 19,300 | 188-0 | 14,200 | 187-7 | 13,000 |
| 5 | 197-7 | 86,500 | 193-3 | 45,300 | 191-0 | 30,000 | 189-1 | 19,300 | 188-0 | 14,200 | 187-5 | 12,200 |
| 6 | 197-6 | 85,000 | 193-3 | 45,300 | 191-0 | 30,000 | 189-2 | 19,800 | 187-8 | 13,400 | 187-6 | 12,600 |
| 7 | 197-4 | 83,000 | 193-0 | 43,200 | 191-0 | 30,000 | 189-2 | 19,800 | 187-7 | 13,000 | 187-6 | 12,600 |
| 8 | 197-4 | 83,000 | 193-0 | 43,200 | 191-0 | 30,000 | 189-0 | 18,800 | 187-7 | 13,000 | 187-3 | 11,400 |
| 9 | 197-2 | 81,000 | 192-8 | 41,800 | 191-0 | 30,000 | 188-9 | 18,300 | 187-8 | 13,400 | 187-4 | 11,800 |
| 10 | 197-0 | 79,000 | 193-0 | 43,200 | 191-0 | 30,000 | 188-8 | 17,900 | 187-8 | 13,400 | 187-4 | 11,800 |
| 11 | 196-8 | 76,000 | 192-8 | 41,800 | 191-0 | 30,000 | 188-9 | 18,300 | 188-0 | 14,200 | 187-2 | 11,000 |
| 12 | 196-9 | 77,000 | 192-7 | 41,100 | 190-8 | 28,800 | 188-9 | 18,300 | 187-7 | 13,000 | 187-2 | 11,000 |
| 13 | 196-8 | 76,000 | 192-8 | 41,800 | 190-8 | 28,800 | 188-8 | 17,900 | 187-7 | 13,000 | 187-2 | 11,000 |
| 14 | 196-5 | 73,000 | 192-7 | 41,100 | 190-7 | 28,200 | 188-7 | 17,400 | 187-7 | 13,000 | 187-3 | 11,400 |
| 15 | 196-3 | 71,000 | 192-5 | 39,700 | 190-6 | 27,600 | 188-8 | 17,900 | 187-6 | 12,600 | 186-8 | 9,600 |
| 16 | 196-2 | 70,000 | 192-3 | 38,300 | 190-6 | 27,600 | 188-7 | 17,400 | 187-8 | 13,400 | 186-8 | 9,600 |
| 17 | 196-0 | 68,000 | 192-3 | 38,300 | 190-5 | 27,000 | 188-7 | 17,400 | 187-8 | 13,400 | 186-7 | 9,300 |
| 18 | 195-7 | 65,300 | 192-2 | 37,600 | 190-3 | 25,800 | 188-7 | 17,400 | 187-8 | 13,400 | 186-7 | 9,300 |
| 19 | 195-6 | 64,400 | 192-0 | 36,200 | 190-0 | 24,000 | 188-8 | 17,900 | 187-2 | 11,000 | 186-6 | 9,000 |
| 20 | 195-4 | 62,600 | 191-9 | 35,500 | 190-0 | 24,000 | 188-7 | 17,400 | 187-8 | 13,400 | 186-5 | 8,700 |
| 21 | 195-1 | 59,900 | 191-8 | 34,800 | 190-2 | 25,200 | 188-5 | 16,400 | 187-8 | 13,400 | 186-5 | 8,700 |
| 22 | 195-0 | 59,000 | 191-6 | 33,600 | 190-2 | 25,200 | 188-6 | 16,900 | 187-8 | 13,400 | 186-4 | 8,400 |
| 23 | 195-0 | 59,000 | 191-6 | 33,600 | 190-0 | 24,000 | 188-3 | 15,400 | 187-8 | 13,400 | 186-3 | 8,100 |
| 24 | 194-9 | 58,100 | 191-5 | 33,000 | 190-0 | 24,000 | 188-4 | 15,900 | 187-8 | 13,400 | 186-3 | 8,100 |
| 25 | 194-6 | 55,400 | 191-3 | 31,800 | 189-9 | 23,400 | 188-3 | 15,400 | 187-7 | 13,000 | 186-6 | 9,000 |
| 26 | 194-6 | 55,400 | 191-5 | 33,000 | 189-7 | 22,400 | 188-7 | 17,400 | 187-7 | 13,000 | 186-5 | 8,700 |
| 27 | 194-4 | 53,600 | 191-3 | 31,800 | 189-6 | 21,900 | 188-4 | 15,900 | 187-7 | 13,000 | 186-2 | 7,800 |
| 28 | 194-3 | 52,800 | 191-3 | 31,800 | 189-6 | 21,900 | 188-4 | 15,900 | 187-7 | 13,000 | 186-2 | 7,800 |
| 29 | 194-2 | 52,000 | 191-2 | 31,200 | 189-4 | 20,800 | 188-3 | 15,400 | 187-8 | 13,400 | 186-3 | 8,100 |
| 30 | 194-2 | 52,000 | 191-2 | 31,200 | 189-3 | 20,300 | 188-3 | 15,400 | 187-7 | 13,000 | 186-3 | 8,100 |
| 31 | 194-0 | 50,400 | 191-2 | 31,200 | ..... | ..... | 188-1 | 14,600 | ..... | ..... | 186-2 | 7,800 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1913.

(Drainage Area 17,800 square miles).

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January | 9,000 | 6,600 | 7,490 | 0-42 | 0-48 | 461,000 |
| February | 7,000 | 6,100 | 6,490 | 0-36 | 0-38 | 360,000 |
| March | 7,200 | 5,900 | 6,610 | 0-37 | 0-43 | 406,000 |
| April | 32,400 | 7,200 | 15,800 | 0-89 | 0-99 | 940,000 |
| May | 80,000 | 32,400 | 44,600 | 2-51 | 2-89 | 2,740,000 |
| June | 137,000 | 84,000 | 114,000 | 6-40 | 7-14 | 6,780,000 |
| July | 94,000 | 50,400 | 70,200 | 3-94 | 4-54 | 4,320,000 |
| August | 50,400 | 31,200 | 38,800 | 2-18 | 2-5 | 2,390,000 |
| September | 31,200 | 20,300 | 26,700 | 1-50 | 1-67 | 1,590,000 |
| October | 20,300 | 14,600 | 17,600 | 0-99 | 1-14 | 1,080,000 |
| November | 15,000 | 11,000 | 13,300 | 0-75 | 0-84 | 791,000 |
| December | 13,000 | 7,800 | 10,200 | 0-57 | 0-66 | 627,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1914.

| Day | January. | | February. | | March. | | April. | | May. | | June. | |
|-----|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 186-2 | 7,800 | 186-7 | 9,300 | 186-2 | 7,800 | 187-4 | 11,800 | 192-2 | 37,600 | 196-8 | 76,000 |
| 2 | 186-3 | 8,100 | 186-7 | 9,300 | 186-1 | 7,500 | 187-4 | 11,800 | 192-3 | 38,300 | 196-8 | 76,000 |
| 3 | 186-2 | 7,800 | 186-6 | 9,000 | 186-3 | 8,100 | 187-4 | 11,800 | 192-4 | 39,000 | 196-8 | 76,000 |
| 4 | 186-3 | 8,100 | 186-5 | 8,700 | 186-2 | 7,800 | 187-4 | 11,800 | 192-8 | 41,800 | 197-1 | 80,000 |
| 5 | 186-3 | 8,100 | 186-7 | 9,300 | 186-7 | 9,300 | 187-4 | 11,800 | 192-9 | 42,500 | 197-3 | 82,000 |
| 6 | 186-3 | 8,100 | 186-5 | 8,700 | 186-3 | 8,100 | 187-4 | 11,800 | 193-2 | 44,600 | 197-5 | 84,000 |
| 7 | 186-7 | 9,300 | 186-4 | 8,400 | 186-2 | 7,800 | 187-5 | 12,200 | 193-4 | 46,000 | 197-5 | 84,000 |
| 8 | 187-0 | 10,200 | 186-7 | 9,300 | 186-3 | 8,100 | 187-8 | 13,400 | 193-5 | 46,700 | 197-6 | 85,000 |
| 9 | 187-0 | 10,200 | 186-5 | 8,700 | 186-2 | 7,800 | 187-9 | 13,800 | 193-7 | 48,100 | 197-6 | 85,000 |
| 10 | 187-2 | 11,000 | 186-4 | 8,400 | 186-1 | 7,500 | 188-1 | 14,600 | 193-9 | 49,600 | 197-6 | 85,000 |
| 11 | 187-3 | 11,400 | 186-4 | 8,400 | 186-1 | 7,500 | 188-3 | 15,400 | 194-1 | 51,200 | 197-4 | 83,000 |
| 12 | 187-4 | 11,800 | 186-3 | 8,100 | 186-1 | 7,500 | 188-5 | 16,400 | 194-2 | 52,000 | 197-3 | 82,000 |
| 13 | 187-3 | 11,400 | 186-3 | 8,100 | 186-2 | 7,800 | 188-6 | 16,900 | 194-3 | 52,800 | 197-2 | 81,000 |
| 14 | 187-3 | 11,400 | 186-3 | 8,100 | 186-2 | 7,800 | 189-0 | 18,800 | 194-6 | 55,400 | 197-2 | 81,000 |
| 15 | 187-4 | 11,800 | 186-4 | 8,400 | 186-4 | 8,400 | 189-3 | 20,300 | 194-8 | 57,200 | 197-3 | 82,000 |
| 16 | 187-7 | 13,000 | 186-3 | 8,100 | 186-3 | 8,100 | 189-6 | 21,900 | 195-0 | 59,000 | 197-1 | 80,000 |
| 17 | 187-7 | 13,000 | 186-3 | 8,100 | 186-3 | 8,100 | 189-8 | 22,900 | 195-3 | 61,700 | 197-2 | 81,000 |
| 18 | 187-3 | 11,400 | 186-2 | 7,800 | 186-6 | 9,000 | 190-0 | 24,000 | 195-6 | 64,400 | 197-3 | 82,000 |
| 19 | 187-3 | 11,400 | 186-1 | 7,500 | 186-8 | 9,600 | 190-4 | 26,400 | 195-8 | 66,200 | 197-5 | 84,000 |
| 20 | 187-3 | 11,400 | 186-1 | 7,500 | 186-8 | 9,600 | 190-7 | 28,200 | 195-9 | 67,100 | 197-7 | 86,500 |
| 21 | 187-3 | 11,400 | 186-3 | 8,100 | 186-8 | 9,600 | 190-8 | 28,900 | 196-2 | 70,000 | 197-8 | 88,000 |
| 22 | 187-3 | 11,400 | 186-2 | 7,800 | 186-9 | 9,900 | 191-0 | 30,000 | 196-3 | 71,000 | 197-8 | 88,000 |
| 23 | 187-0 | 10,200 | 186-2 | 7,800 | 187-3 | 11,400 | 191-3 | 31,800 | 196-3 | 71,000 | 197-8 | 88,000 |
| 24 | 187-0 | 10,200 | 186-1 | 7,500 | 187-3 | 11,400 | 191-3 | 31,800 | 196-5 | 73,000 | 197-7 | 86,500 |
| 25 | 187-0 | 10,200 | 186-2 | 7,800 | 187-3 | 11,400 | 191-6 | 33,600 | 196-7 | 75,000 | 197-8 | 88,000 |
| 26 | 187-0 | 10,200 | 186-0 | 7,200 | 187-4 | 11,800 | 191-8 | 34,800 | 196-8 | 76,000 | 197-8 | 88,000 |
| 27 | 187-0 | 10,200 | 185-9 | 7,000 | 187-4 | 11,800 | 191-8 | 34,800 | 196-8 | 76,000 | 197-6 | 85,000 |
| 28 | 186-8 | 9,600 | 186-3 | 8,100 | 187-4 | 11,800 | 192-0 | 36,200 | 196-7 | 75,000 | 197-4 | 83,000 |
| 29 | 186-8 | 9,600 | ..... | ..... | 187-5 | 12,200 | 192-0 | 36,200 | 196-9 | 77,000 | 197-4 | 83,000 |
| 30 | 186-8 | 9,600 | ..... | ..... | 187-3 | 11,400 | 192-1 | 36,900 | 197-0 | 79,000 | 197-3 | 82,000 |
| 31 | 186-8 | 9,600 | ..... | ..... | 187-2 | 11,000 | ..... | ..... | 196-8 | 76,000 | ..... | ..... |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Falls, for 1914—*Concluded.*

| DAY. | July. | | August | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 197-2 | 81,000 | 194-2 | 52,000 |
| 2..... | 197-2 | 81,000 | 194-0 | 50,400 |
| 3..... | 197-3 | 82,000 | 193-8 | 48,800 |
| 4..... | 197-1 | 80,000 | 193-6 | 47,400 |
| 5..... | 197-2 | 81,000 | 193-4 | 46,000 |
| 6..... | 197-3 | 82,000 | 193-3 | 45,300 |
| 7..... | 197-2 | 81,000 | 193-2 | 44,600 |
| 8..... | 197-1 | 80,000 | 193-1 | 43,900 |
| 9..... | 197-3 | 82,000 | 193-0 | 43,200 |
| 10..... | 197-2 | 81,000 | 192-7 | 41,100 |
| 11..... | 197-1 | 80,000 | 192-4 | 39,600 |
| 12..... | 197-1 | 80,000 | 192-3 | 38,300 |
| 13..... | 197-1 | 80,000 | 192-2 | 37,600 |
| 14..... | 197-0 | 79,000 | 192-0 | 36,200 |
| 15..... | 197-0 | 79,000 | 192-0 | 36,200 |
| 16..... | 196-9 | 77,000 | 191-8 | 34,800 |
| 17..... | 196-8 | 76,000 | 191-7 | 34,200 |
| 18..... | 196-8 | 76,000 | 191-5 | 33,000 |
| 19..... | 196-6 | 74,000 | 191-5 | 33,000 |
| 20..... | 196-3 | 71,000 | 191-3 | 31,800 |
| 21..... | 196-3 | 71,000 | 191-2 | 31,200 |
| 22..... | 196-2 | 70,000 | 191-1 | 30,600 |
| 23..... | 196-0 | 68,000 | 191-1 | 90,600 |
| 24..... | 195-8 | 66,200 | 190-9 | 23,400 |
| 25..... | 195-5 | 63,500 | 190-8 | 28,800 |
| 26..... | 195-5 | 63,500 | 190-7 | 28,200 |
| 27..... | 195-2 | 60,800 | 190-7 | 28,200 |
| 28..... | 194-8 | 57,200 | 190-5 | 27,000 |
| 29..... | 194-8 | 57,200 | 190-3 | 25,800 |
| 30..... | 194-5 | 54,500 | 190-2 | 25,200 |
| 31..... | 194-3 | 52,800 | 190-2 | 25,200 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Falls, for 1914.

(Drainage area, 17,800 square miles).

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|---------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January..... | 11,800 | 7,800 | 10,300 | 0-58 | 0-67 | 633,000 |
| February..... | 9,300 | 7,000 | 8,230 | 0-46 | 0-48 | 457,000 |
| March..... | 12,200 | 7,500 | 9,250 | 0-32 | 0-60 | 569,000 |
| April..... | 36,900 | 11,800 | 22,400 | 1-26 | 1-41 | 1,330,000 |
| May..... | 79,000 | 37,600 | 59,400 | 3-33 | 3-84 | 3,650,000 |
| June..... | 88,000 | 76,000 | 23,100 | 4-66 | 5-20 | 4,940,000 |
| July..... | 82,000 | 52,800 | 73,000 | 4-10 | 4-73 | 4,490,000 |
| August..... | 52,000 | 25,200 | 36,300 | 2-03 | 2-34 | 2,230,000 |

SESSIONAL PAPER No. 25e

KOOTENAY RIVER NEAR BONNINGTON POOL (3076).

Location.—At the upper end of Bonnington or Slocan pool, one quarter mile from South Slocan, 12 miles from Nelson, and about 13 miles from the mouth. Nelson district.

Records Available.—June to December, 1914.

Climatic Conditions.—The climatic conditions are similar to those at Nelson (see Kootenay river near Nelson.)

Gauge.—Three vertical staff gauges, 10 feet long, have been used and read by Mr. John Anderson of South Slocan.

Method of Compilation.—Bonnington pool is above the mouth of Slocan river, and the same method of compilation is used as on Kootenay river at Bonnington falls, q.v. For more complete information see report in part 2 called "Compilation of data on Kootenay river between Kootenay lake and the mouth."

Accuracy.—These results should be within 15 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Pool, for 1914.

| DAY. | June. | |
|------|---------------|-------------|
| | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. |
| 1 | 14.5 | 77,200 |
| 2 | 14.6 | 77,900 |
| 3 | 14.8 | 79,500 |
| 4 | 14.9 | 80,200 |
| 5 | 15.0 | 81,000 |
| 6 | 15.1 | 81,700 |
| 7 | 15.3 | 83,200 |
| 8 | 15.4 | 84,000 |
| 9 | 15.5 | 84,700 |
| 10 | 15.5 | 84,700 |
| 11 | 15.4 | 84,000 |
| 12 | 15.3 | 83,200 |
| 13 | 15.1 | 81,700 |
| 14 | 15.3 | 83,200 |
| 15 | 15.6 | 85,400 |
| 16 | 15.8 | 86,900 |
| 17 | 16.0 | 88,400 |
| 18 | 16.1 | 89,200 |
| 19 | 16.3 | 90,700 |
| 20 | 16.5 | 92,200 |
| 21 | 16.4 | 91,400 |
| 22 | 16.3 | 90,700 |
| 23 | 16.2 | 89,900 |
| 24 | 16.1 | 89,200 |
| 25 | 16.0 | 88,400 |
| 26 | 16.0 | 88,400 |
| 27 | 15.9 | 87,700 |
| 28 | 15.8 | 86,900 |
| 29 | 15.7 | 86,200 |
| 30 | 15.6 | 85,400 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Bonnington Pool, for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 15-5 | 84,700 | 10-8 | 51,500 | 6-04 | 23,500 | 5-14 | 19,000 | 4-94 | 18,100 | 4-94 | 18,100 |
| 2 | 15-4 | 84,000 | 10-6 | 50,200 | 5-94 | 23,000 | 5-14 | 19,000 | 4-95 | 18,100 | 4-94 | 18,100 |
| 3 | 15-3 | 83,200 | 10-4 | 48,800 | 5-74 | 22,000 | 5-14 | 19,000 | 4-97 | 18,200 | 4-89 | 17,800 |
| 4 | 15-2 | 82,500 | 10-2 | 47,500 | 5-64 | 21,500 | 5-14 | 19,000 | 4-98 | 18,400 | 4-84 | 17,600 |
| 5 | 15-3 | 83,200 | 10-0 | 46,200 | 5-44 | 20,500 | 5-14 | 19,000 | 5-54 | 21,000 | 4-79 | 17,400 |
| 6 | 15-5 | 84,700 | 9-8 | 44,900 | 5-44 | 20,500 | 5-14 | 19,000 | 5-64 | 21,500 | 4-74 | 17,100 |
| 7 | 15-5 | 84,700 | 9-6 | 43,600 | 5-44 | 20,500 | 5-09 | 18,800 | 5-69 | 21,800 | 4-74 | 17,100 |
| 8 | 15-5 | 84,700 | 9-4 | 42,400 | 5-44 | 20,500 | 5-04 | 18,600 | 5-74 | 22,000 | 4-64 | 16,600 |
| 9 | 15-4 | 84,000 | 9-2 | 41,200 | 5-44 | 20,500 | 5-04 | 18,600 | 5-79 | 22,200 | 4-51 | 16,100 |
| 10 | 15-3 | 83,200 | 9-0 | 40,000 | 5-44 | 20,500 | 4-99 | 18,400 | 5-94 | 23,000 | 4-49 | 15,800 |
| 11 | 15-2 | 82,500 | 8-8 | 38,800 | 5-44 | 20,500 | 4-94 | 18,100 | 5-94 | 23,000 | 4-34 | 15,100 |
| 12 | 15-1 | 81,700 | 8-6 | 37,600 | 5-34 | 20,000 | 4-89 | 17,300 | 5-89 | 22,800 | 4-29 | 14,800 |
| 13 | 15-1 | 81,700 | 8-24 | 35,500 | 5-34 | 20,000 | 4-85 | 17,600 | 5-84 | 22,500 | 4-14 | 14,100 |
| 14 | 15-0 | 81,000 | 8-14 | 35,000 | 5-24 | 19,500 | 4-85 | 17,600 | 5-84 | 22,500 | 4-09 | 13,800 |
| 15 | 15-0 | 81,000 | 7-94 | 33,800 | 5-24 | 19,500 | 4-80 | 17,400 | 5-89 | 22,800 | 4-04 | 13,600 |
| 16 | 14-9 | 80,200 | 7-94 | 33,800 | 5-24 | 19,500 | 4-75 | 17,100 | 5-79 | 22,200 | 3-94 | 13,200 |
| 17 | 14-9 | 80,200 | 7-84 | 33,300 | 5-14 | 19,000 | 4-75 | 17,100 | 5-79 | 22,200 | 3-78 | 12,400 |
| 18 | 14-8 | 79,500 | 7-74 | 32,700 | 5-04 | 18,600 | 4-84 | 17,600 | 5-64 | 21,500 | ..... | 12,000 |
| 19 | 14-6 | 77,900 | 7-54 | 31,600 | 5-04 | 18,600 | 4-94 | 18,100 | 5-59 | 21,200 | ..... | 12,000 |
| 20 | 14-2 | 75,000 | 7-44 | 31,000 | 5-04 | 18,600 | 4-95 | 18,100 | 5-54 | 21,000 | 3-53 | 11,200 |
| 21 | 13-8 | 72,100 | 7-34 | 30,500 | 5-04 | 18,600 | 4-95 | 18,100 | 5-44 | 20,500 | 3-43 | 10,800 |
| 22 | 13-6 | 70,700 | 7-24 | 29,900 | 5-09 | 18,800 | 4-95 | 18,100 | 5-34 | 20,000 | 3-43 | 10,800 |
| 23 | 13-3 | 68,600 | 7-44 | 31,000 | 5-09 | 18,800 | 4-95 | 18,100 | 5-24 | 19,500 | 3-33 | 10,400 |
| 24 | 13-0 | 66,500 | 7-24 | 29,900 | 5-09 | 18,800 | 4-95 | 18,100 | 5-19 | 19,200 | 3-33 | 10,400 |
| 25 | 12-7 | 64,400 | 7-04 | 28,800 | 5-14 | 19,000 | 4-94 | 18,100 | 5-14 | 19,000 | 3-33 | 10,400 |
| 26 | 12-3 | 61,500 | 6-84 | 27,700 | 5-14 | 19,000 | 4-94 | 18,100 | 5-14 | 19,000 | 3-33 | 10,400 |
| 27 | 12-0 | 59,400 | 6-64 | 26,600 | 5-14 | 19,000 | 4-89 | 17,900 | 5-14 | 19,000 | 3-23 | 10,100 |
| 28 | 11-8 | 58,000 | 6-54 | 26,100 | 5-15 | 19,000 | 4-89 | 17,900 | 5-09 | 18,800 | 3-23 | 10,100 |
| 29 | 11-5 | 56,000 | 6-44 | 25,500 | 5-15 | 19,000 | 4-84 | 17,600 | 4-94 | 18,100 | 3-23 | 10,100 |
| 30 | 11-2 | 54,100 | 6-34 | 25,000 | 5-14 | 19,000 | 4-84 | 17,600 | 4-89 | 17,900 | 3-23 | 10,100 |
| 31 | 11-2 | 54,100 | 6-14 | 24,000 | ..... | ..... | 4-84 | 17,600 | ..... | ..... | 3-13 | 9,800 |

MONTHLY DISCHARGE of Kootenay River near Bonnington Pool, for 1914.

(Drainage area, 17,800 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| June | 92,200 | 77,200 | 85,400 | 4-79 | 5-34 | 5,080,000 | D |
| July | 84,700 | 54,100 | 75,000 | 4-21 | 4-85 | 4,610,000 | B |
| August | 51,500 | 24,000 | 35,600 | 2-00 | 2-31 | 2,190,000 | D |
| September | 23,500 | 18,600 | 19,900 | 1-12 | 1-25 | 1,180,000 | D |
| October | 19,000 | 17,100 | 18,100 | 1-02 | 1-18 | 1,110,000 | C |
| November | 23,000 | 17,900 | 20,600 | 1-16 | 1-29 | 1,230,000 | C |
| December | 18,100 | 9,800 | 14,100 | 0-79 | 0-91 | 867,000 | D |

KOOTENAY RIVER NEAR NELSON (3077).

Location.—At Astley's wharf, Nelson, about 2 miles above the outlet of Kootenay lake, 25 miles from the mouth. Nelson District.

Records Available.—1913 and 1914.

SESSIONAL PAPER No. 25e

Climatic Conditions.—The precipitation at Nelson, from December 1, 1913, to November 30, 1914, was 27.6 inches. This may be considered slightly less than usual. Considerable rain generally falls from spring till the end of June. July and August, and sometimes September, are usually dry months. October and November are generally unsettled, but not cold. The winters are mild. The thermometer seldom goes below zero, and then possibly only for one night during the winter. The average temperature throughout the winter is about 30° F. The precipitation through the winter months is fairly heavy, sometimes snow, sometimes rain. The lake no doubt has an effect on the climate. One effect of the lake is very apparent in that the river below the lake seldom, if ever, freezes. The main lake never freezes, and the west arm, on which Nelson is situated, only occasionally.

Gauge.—The gauge is a vertical staff, 20 feet long, situated on Astley's wharf, and read daily by Mr. F. A. Lidgate of Nelson.

Method of Compilation.—As in the case of Kootenay river at Bonnington falls and at Bonnington pool, discharges for the Nelson gauge are determined by subtracting the discharges of Slocan river from discharges of Kootenay river near Glade. To compensate for the inflow to Kootenay river below the outlet of the lake and above Glade, the discharge is reduced by 1 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE OF Kootenay River near Nelson, for 1913.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 7,600 | 0-60 | 6,550 | 0-50 | 6,350 | ..... | 8,250 | 6-1 | 31,500 | ..... | ..... | 86,300 |
| 2 | 7,800 | ..... | 6,520 | ..... | 6,350 | ..... | 8,710 | 6-1 | 31,500 | ..... | 15-1 | 92,300 |
| 3 | 8,000 | ..... | 6,490 | ..... | 6,350 | ..... | 9,180 | 6-1 | 31,500 | ..... | 15-8 | 97,700 |
| 4 | 1-15 | 8,200 | 6,460 | ..... | 6,350 | ..... | 9,640 | ..... | 31,300 | ..... | 16-6 | 104,000 |
| 5 | ..... | 8,000 | 6,430 | ..... | 6,350 | ..... | 1-70 | 10,100 | 6-0 | 31,000 | 17-3 | 110,000 |
| 6 | ..... | 7,800 | ..... | 6,400 | ..... | 6,350 | ..... | 10,100 | 6-0 | 31,000 | 17-9 | 114,000 |
| 7 | ..... | 7,610 | ..... | 6,380 | ..... | 6,350 | ..... | 10,100 | 5-9 | 30,400 | 18-3 | 118,000 |
| 8 | ..... | 7,420 | 0-50 | 6,350 | 0-50 | 6,350 | 1-70 | 10,100 | 5-9 | 30,400 | ..... | 122,000 |
| 9 | ..... | 7,230 | ..... | 6,340 | ..... | 6,400 | 1-70 | 10,100 | 6-1 | 31,000 | 19-3 | 126,000 |
| 10 | ..... | 7,040 | ..... | 6,330 | ..... | 6,450 | 1-75 | 10,300 | 6-3 | 32,600 | 19-5 | 127,000 |
| 11 | 0-70 | 6,850 | ..... | 6,315 | ..... | 6,500 | 1-85 | 10,700 | ..... | 34,000 | 19-9 | 130,000 |
| 12 | ..... | 6,850 | ..... | 6,300 | ..... | 6,550 | 1-95 | 11,100 | 6-8 | 35,500 | 20-1 | 132,000 |
| 13 | ..... | 6,850 | ..... | 6,290 | ..... | 6,600 | ..... | 12,100 | 7-0 | 36,700 | 20-3 | 134,000 |
| 14 | ..... | 6,850 | ..... | 6,280 | ..... | 6,650 | 2-40 | 13,000 | 7-4 | 39,100 | 20-25 | 133,000 |
| 15 | ..... | 6,850 | 0-40 | 6,270 | 0-65 | 6,700 | 2-90 | 15,400 | 7-6 | 40,300 | ..... | 132,000 |
| 16 | ..... | 6,850 | ..... | 6,280 | ..... | 6,760 | 3-20 | 16,800 | 7-7 | 40,900 | 20-0 | 131,000 |
| 17 | ..... | 6,850 | ..... | 6,290 | ..... | 6,830 | 3-40 | 17,800 | 7-8 | 41,500 | 19-7 | 129,000 |
| 18 | 0-70 | 6,850 | ..... | 6,300 | ..... | 6,900 | 3-70 | 19,200 | ..... | 42,100 | 19-2 | 125,000 |
| 19 | ..... | 6,810 | ..... | 6,315 | ..... | 6,960 | 4-0 | 20,700 | 8-0 | 42,700 | 18-9 | 122,000 |
| 20 | ..... | 6,775 | ..... | 6,330 | ..... | 7,020 | ..... | 22,600 | 8-1 | 43,300 | 18-7 | 121,000 |
| 21 | ..... | 6,730 | ..... | 6,340 | ..... | 7,080 | 4-8 | 24,600 | 8-1 | 43,300 | 18-35 | 118,000 |
| 22 | ..... | 6,685 | 0-50 | 6,350 | 0-80 | 7,150 | 5-0 | 25,700 | 8-3 | 44,500 | ..... | 115,000 |
| 23 | ..... | 6,640 | ..... | 6,350 | ..... | 7,100 | 5-2 | 26,700 | 8-5 | 45,800 | 17-5 | 111,000 |
| 24 | ..... | 6,595 | ..... | 6,350 | ..... | 7,060 | 5-3 | 27,200 | 8-9 | 46,300 | 17-4 | 110,000 |
| 25 | 0-60 | 6,550 | ..... | 6,350 | ..... | 7,020 | 5-4 | 27,700 | ..... | 51,600 | 17-1 | 108,000 |
| 26 | ..... | 6,550 | ..... | 6,350 | ..... | 6,980 | 5-5 | 28,300 | 9-9 | 54,900 | 17-0 | 107,000 |
| 27 | ..... | 6,550 | ..... | 6,350 | ..... | 6,940 | ..... | 29,200 | 10-6 | 59,700 | 16-6 | 104,000 |
| 28 | ..... | 6,550 | ..... | 6,350 | ..... | 6,900 | 5-85 | 30,100 | 11-4 | 65,300 | 16-3 | 102,000 |
| 29 | ..... | 6,550 | ..... | ..... | 0-70 | 6,850 | 6-0 | 31,000 | 12-1 | 70,200 | ..... | 100,000 |
| 30 | ..... | 6,550 | ..... | ..... | ..... | 7,320 | 6-1 | 31,500 | 12-8 | 75,200 | 15-85 | 98,000 |
| 31 | ..... | 6,550 | ..... | ..... | ..... | 7,780 | ..... | ..... | 13-5 | 80,300 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE OF KOOTENAY RIVER near Nelson, for 1913.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 15-6 | 96,100 | 8-7 | 47,000 | 5-6 | 28,800 | 4-0 | 20,700 | 2-8 | 14,900 | 1-95 | 11,100 |
| 2 | 15-4 | 94,600 | 8-6 | 46,400 | 5-6 | 28,800 | 3-9 | 20,200 | 2-8 | 14,900 | 1-95 | 11,100 |
| 3 | 15-2 | 93,100 | 8-3 | 45,500 | 5-5 | 28,300 | 3-8 | 19,700 | 2-8 | 14,900 | 1-9 | 10,900 |
| 4 | 15-0 | 91,600 | 8-3 | 44,500 | 5-5 | 28,300 | 3-7 | 19,200 | 2-8 | 14,900 | 1-9 | 10,900 |
| 5 | 14-65 | 88,800 | 8-2 | 43,900 | 5-6 | 28,800 | ..... | 18,900 | 2-8 | 14,900 | 1-85 | 10,700 |
| 6 | ..... | 86,800 | 8-05 | 43,000 | 5-7 | 29,300 | 3-6 | 18,700 | 2-7 | 14,400 | 1-85 | 10,700 |
| 7 | 14-1 | 84,700 | 8-0 | 42,700 | ..... | 29,300 | 3-6 | 18,700 | 2-7 | 14,499 | ..... | 10,700 |
| 8 | 13-9 | 83,200 | 7-9 | 42,100 | 5-7 | 29,300 | 3-6 | 18,700 | 2-6 | 13,900 | 1-85 | 10,700 |
| 9 | 13-6 | 81,000 | 7-8 | 41,500 | 5-7 | 29,300 | 3-5 | 18,300 | ..... | 13,400 | 1-85 | 10,700 |
| 10 | 13-5 | 80,300 | ..... | 40,900 | 5-7 | 29,300 | 3-5 | 18,300 | 2-4 | 13,000 | 1-85 | 10,700 |
| 11 | 13-2 | 78,100 | 7-6 | 40,300 | 5-6 | 28,800 | 3-45 | 18,000 | 2-3 | 12,600 | 1-8 | 10,500 |
| 12 | 13-0 | 76,700 | 7-5 | 39,700 | 5-5 | 28,300 | ..... | 17,300 | 2-2 | 12,200 | 1-8 | 10,500 |
| 13 | ..... | 74,500 | 7-4 | 39,100 | 5-4 | 27,700 | 3-4 | 17,800 | 2-1 | 11,800 | 1-7 | 10,100 |
| 14 | 12-4 | 72,300 | 7-3 | 38,500 | ..... | 27,300 | 3-3 | 17,300 | 2-1 | 11,800 | ..... | 9,900 |
| 15 | 12-2 | 70,900 | 7-3 | 38,500 | 5-2 | 26,700 | 3-3 | 17,300 | 2-1 | 11,800 | 1-6 | 9,700 |
| 16 | 11-7 | 67,400 | 7-2 | 37,900 | 5-1 | 26,200 | 3-3 | 17,300 | ..... | 11,800 | 1-6 | 9,700 |
| 17 | 11-45 | 65,600 | ..... | 37,900 | 5-0 | 25,700 | 3-3 | 17,300 | 2-1 | 11,800 | 1-6 | 9,700 |
| 18 | 11-05 | 62,800 | 7-0 | 36,700 | 5-0 | 25,700 | 3-2 | 16,800 | 2-1 | 11,800 | 1-6 | 9,700 |
| 19 | 10-85 | 61,400 | 6-8 | 35,500 | 4-9 | 25,100 | ..... | 16,800 | 2-1 | 11,800 | 1-55 | 9,500 |
| 20 | ..... | 59,800 | 6-7 | 34,900 | 4-8 | 24,600 | 3-2 | 16,800 | 2-05 | 11,600 | 1-55 | 9,500 |
| 21 | 10-4 | 58,300 | 6-6 | 34,300 | ..... | 24,100 | 3-2 | 16,800 | 2-05 | 11,600 | ..... | 9,400 |
| 22 | 10-2 | 56,900 | 6-5 | 33,800 | 4-6 | 23,600 | 3-2 | 16,800 | 2-05 | 11,600 | 1-5 | 9,300 |
| 23 | 10-1 | 56,200 | 6-4 | 33,200 | 4-6 | 23,600 | 3-2 | 16,800 | ..... | 11,600 | 1-45 | 9,100 |
| 24 | 10-0 | 55,600 | ..... | 32,400 | 4-5 | 23,100 | 3-2 | 16,800 | 2-05 | 11,600 | 1-4 | 8,950 |
| 25 | 9-55 | 54,600 | 6-1 | 31,500 | 4-5 | 23,100 | 3-1 | 16,300 | 2-05 | 11,600 | 1-3 | 8,650 |
| 26 | 9-8 | 54,200 | 6-0 | 31,000 | 4-4 | 22,600 | ..... | 16,300 | 2-1 | 11,800 | 1-25 | 8,500 |
| 27 | ..... | 52,900 | 6-0 | 31,000 | 4-3 | 22,100 | 3-1 | 16,300 | 2-05 | 11,600 | 1-2 | 8,350 |
| 28 | 9-4 | 51,600 | 6-0 | 31,000 | ..... | 21,600 | 3-0 | 15,900 | 2-05 | 11,600 | ..... | 8,200 |
| 29 | 9-3 | 50,900 | 5-9 | 30,400 | 4-1 | 21,100 | 3-0 | 15,900 | 2-0 | 11,400 | 1-1 | 8,050 |
| 30 | 9-1 | 49,600 | 5-8 | 29,800 | 4-0 | 20,700 | 3-0 | 15,900 | ..... | 11,200 | 1-1 | 8,050 |
| 31 | 8-9 | 48,300 | ..... | 29,800 | ..... | ..... | 2-9 | 15,400 | ..... | ..... | 1-1 | 8,050 |

MONTHLY DISCHARGE of Kootenay River near Nelson, for 1913.

(Drainage area, 77,700 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage Area. | Total in Acre-feet. |
| January | 8,200 | 6,550 | 7,020 | 0-40 | 0-43 | 432,000 |
| February | 6,550 | 6,270 | 6,360 | 0-36 | 0-38 | 353,000 |
| March | 7,750 | 6,350 | 6,750 | 0-38 | 0-44 | 415,000 |
| April | 31,500 | 8,250 | 17,900 | 1-01 | 1-13 | 1,060,000 |
| May | 80,300 | 30,400 | 43,500 | 2-46 | 2-84 | 2,675,000 |
| June | 134,000 | 86,300 | 115,000 | 3-50 | 7-25 | 6,840,000 |
| July | 96,100 | 48,300 | 69,700 | 6-94 | 4-54 | 4,286,000 |
| August | 47,000 | 29,800 | 37,500 | 2-12 | 2-44 | 2,310,000 |
| September | 29,300 | 20,700 | 26,000 | 1-47 | 1-64 | 1,550,000 |
| October | 20,700 | 15,400 | 17,500 | 0-99 | 1-14 | 1,080,000 |
| November | 14,900 | 11,200 | 12,600 | 0-71 | 0-79 | 750,000 |
| December | 11,100 | 8,650 | 9,730 | 0-55 | 0-63 | 598,000 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Nelson,
for 1914.

| Day. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-1 | 8,050 | 1-6 | 9,700 | 0-9 | 7,450 | 1-9 | 10,900 | 6-90 | 36,100 | 13-00 | 76,700 |
| 2..... | 1-1 | 8,050 | 1-5 | 9,300 | 0-9 | 7,450 | 1-9 | 10,900 | 7-10 | 37,300 | 13-15 | 77,700 |
| 3..... | 1-1 | 8,050 | 1-3 | 8,650 | 0-9 | 7,450 | 2-0 | 11,400 | 7-50 | 39,700 | 13-15 | 77,700 |
| 4..... | 1-1 | 8,050 | 1-2 | 8,350 | 0-9 | 7,450 | 2-0 | 11,400 | 7-90 | 42,100 | 13-70 | 81,700 |
| 5..... | 1-1 | 8,050 | 1-1 | 8,050 | 0-95 | 7,600 | 2-04 | 11,600 | 8-10 | 43,300 | 13-90 | 83,200 |
| 6..... | 1-2 | 8,350 | 1-0 | 7,750 | 0-95 | 7,600 | 2-10 | 11,900 | 8-20 | 43,900 | 14-00 | 84,000 |
| 7..... | 1-4 | 8,950 | 1-0 | 7,750 | 0-95 | 7,600 | 2-20 | 12,200 | 8-40 | 45,100 | 14-10 | 84,700 |
| 8..... | 1-5 | 9,300 | 1-0 | 7,750 | 0-98 | 7,690 | 2-45 | 13,200 | 8-70 | 47,000 | 14-10 | 84,700 |
| 9..... | 1-7 | 10,100 | 1-0 | 7,750 | 1-0 | 7,750 | 2-55 | 13,700 | 8-90 | 48,300 | 14-10 | 84,700 |
| 10..... | 1-9 | 10,900 | 1-0 | 7,750 | 1-0 | 7,750 | 2-60 | 13,900 | 9-05 | 49,300 | 14-00 | 84,000 |
| 11..... | 1-95 | 11,100 | 1-0 | 7,750 | 1-0 | 7,750 | 2-90 | 15,400 | 9-20 | 50,200 | 13-90 | 83,200 |
| 12..... | 2-0 | 11,400 | 1-0 | 7,750 | 1-0 | 7,750 | 3-00 | 15,900 | 9-40 | 51,600 | 13-80 | 82,400 |
| 13..... | 2-0 | 11,400 | 1-0 | 7,750 | 1-0 | 7,750 | 3-10 | 16,300 | 9-70 | 53,500 | 13-70 | 81,700 |
| 14..... | 2-0 | 11,400 | 1-0 | 7,750 | 1-0 | 7,750 | 3-50 | 18,300 | 9-90 | 54,900 | 13-70 | 81,700 |
| 15..... | 2-0 | 11,400 | 0-95 | 7,600 | 1-1 | 8,050 | 4-00 | 20,700 | 10-40 | 58,300 | 13-80 | 82,400 |
| 16..... | 2-0 | 11,400 | 0-9 | 7,450 | 1-2 | 8,350 | 4-40 | 22,600 | 10-70 | 60,400 | 13-80 | 82,400 |
| 17..... | 2-0 | 11,400 | 0-9 | 7,450 | 1-3 | 8,650 | 4-60 | 23,600 | 11-05 | 62,800 | 13-95 | 83,600 |
| 18..... | 2-0 | 11,400 | 0-9 | 7,450 | 1-4 | 8,950 | 4-80 | 24,600 | 11-40 | 65,300 | 14-15 | 85,000 |
| 19..... | 2-1 | 11,800 | 0-9 | 7,450 | 1-5 | 9,300 | 5-10 | 26,200 | 11-80 | 68,100 | 14-45 | 87,400 |
| 20..... | 2-0 | 11,400 | 0-8 | 7,150 | 1-6 | 9,700 | 5-40 | 27,700 | 12-00 | 69,500 | 14-60 | 88,500 |
| 21..... | 1-9 | 10,900 | 0-8 | 7,150 | 1-7 | 10,100 | 5-60 | 28,800 | 12-20 | 70,900 | 14-60 | 88,500 |
| 22..... | 1-9 | 10,900 | 0-8 | 7,150 | 1-75 | 10,300 | 5-80 | 29,800 | 12-40 | 72,300 | 14-70 | 89,200 |
| 23..... | 1-8 | 10,500 | 0-8 | 7,150 | 1-8 | 10,500 | 6-00 | 31,000 | 12-60 | 73,800 | 14-70 | 89,200 |
| 24..... | 1-7 | 10,100 | 0-8 | 7,150 | 1-8 | 10,500 | 6-20 | 32,000 | 12-80 | 75,200 | 14-60 | 88,500 |
| 25..... | 1-7 | 10,100 | 0-8 | 7,150 | 1-85 | 10,700 | 6-30 | 32,600 | 13-00 | 76,700 | 14-50 | 87,800 |
| 26..... | 1-7 | 10,100 | 0-9 | 7,450 | 1-9 | 10,900 | 6-40 | 33,200 | 13-20 | 78,100 | 14-40 | 87,000 |
| 27..... | 1-7 | 10,100 | 0-9 | 7,450 | 2-0 | 11,400 | 6-50 | 33,800 | 13-20 | 78,100 | 14-20 | 85,400 |
| 28..... | 1-8 | 10,500 | 0-9 | 7,450 | 2-0 | 11,400 | 6-60 | 34,300 | 13-25 | 78,400 | 14-10 | 84,700 |
| 29..... | 1-75 | 10,300 | ..... | ..... | 1-95 | 11,100 | 6-70 | 34,900 | 13-25 | 78,400 | 13-90 | 83,200 |
| 30..... | 1-7 | 10,100 | ..... | ..... | 1-9 | 10,900 | 6-80 | 35,500 | 13-20 | 78,100 | 13-90 | 83,200 |
| 31..... | 1-7 | 10,100 | ..... | ..... | 1-9 | 10,900 | ..... | ..... | 13-10 | 77,400 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Nelson, for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 13-70 | 81,700 | 9-25 | 50,500 | 4-70 | 24,100 | 3-65 | 18,900 | 3-30 | 17,300 | 3-45 | 18,000 |
| 2 | 13-70 | 81,700 | 9-00 | 49,000 | 4-60 | 23,600 | 3-65 | 18,900 | 3-40 | 17,800 | 3-40 | 17,800 |
| 3 | 13-70 | 81,700 | 8-80 | 47,600 | 4-55 | 23,300 | 3-60 | 18,700 | 3-55 | 18,500 | 3-35 | 17,500 |
| 4 | 13-70 | 81,700 | 8-60 | 46,400 | 4-50 | 23,100 | 3-55 | 18,500 | 3-70 | 19,200 | 3-35 | 17,500 |
| 5 | 13-80 | 82,400 | 8-40 | 45,100 | 4-40 | 22,600 | 3-60 | 18,700 | 3-90 | 20,200 | 3-25 | 17,000 |
| 6 | 13-80 | 82,400 | 8-20 | 43,900 | 4-25 | 21,800 | 3-55 | 18,500 | 4-05 | 20,900 | 3-20 | 16,800 |
| 7 | 13-80 | 82,400 | 8-00 | 42,700 | 4-10 | 21,100 | 3-50 | 18,300 | 4-15 | 21,300 | 3-15 | 16,500 |
| 8 | 13-80 | 82,400 | 7-90 | 42,100 | 4-05 | 20,900 | 3-45 | 18,000 | 4-25 | 21,800 | 3-10 | 16,300 |
| 9 | 13-80 | 82,400 | 7-60 | 40,300 | 4-00 | 20,700 | 3-45 | 18,000 | 4-30 | 22,100 | 3-00 | 15,900 |
| 10 | 13-80 | 82,400 | 7-50 | 39,700 | 4-00 | 20,700 | 3-40 | 17,800 | 4-35 | 22,300 | 2-85 | 15,100 |
| 11 | 13-80 | 82,400 | 7-30 | 38,500 | 3-90 | 20,200 | 3-40 | 17,800 | 4-40 | 22,600 | 2-70 | 14,400 |
| 12 | 13-70 | 81,700 | 7-10 | 37,300 | 3-85 | 19,900 | 3-35 | 17,500 | 4-40 | 22,600 | 2-60 | 13,900 |
| 13 | 13-60 | 81,000 | 6-90 | 36,100 | 3-75 | 19,400 | 3-35 | 17,500 | 4-35 | 22,300 | 2-45 | 13,200 |
| 14 | 13-50 | 80,300 | 6-60 | 34,300 | 3-65 | 18,900 | 3-30 | 17,300 | 4-40 | 22,600 | 2-35 | 12,800 |
| 15 | 13-40 | 79,500 | 6-40 | 33,200 | 3-55 | 18,500 | 3-25 | 17,000 | 4-40 | 22,600 | 2-25 | 12,400 |
| 16 | 13-30 | 78,800 | 6-20 | 32,000 | 3-60 | 18,700 | 3-25 | 17,000 | 4-35 | 22,300 | 2-20 | 12,200 |
| 17 | 13-15 | 77,700 | 6-10 | 31,500 | 3-55 | 18,500 | 3-20 | 16,800 | 4-30 | 22,100 | 2-10 | 11,800 |
| 18 | 13-00 | 76,700 | 6-10 | 31,500 | 3-50 | 18,300 | 3-25 | 17,000 | 4-25 | 21,800 | 2-05 | 11,600 |
| 19 | 12-85 | 75,500 | 6-00 | 31,000 | 3-55 | 18,500 | 3-30 | 17,300 | 4-15 | 21,300 | 1-90 | 10,900 |
| 20 | 12-65 | 74,100 | 5-90 | 30,400 | 3-60 | 18,700 | 3-35 | 17,500 | 4-05 | 20,900 | 1-80 | 10,500 |
| 21 | 12-45 | 72,700 | 5-80 | 29,800 | 3-60 | 18,700 | 3-40 | 17,800 | 3-95 | 20,400 | 1-70 | 10,100 |
| 22 | 12-15 | 70,500 | 5-70 | 29,300 | 3-65 | 18,900 | 3-40 | 17,800 | 3-90 | 20,200 | 1-70 | 10,100 |
| 23 | 11-85 | 68,400 | 5-60 | 28,800 | 3-65 | 18,900 | 3-45 | 18,000 | 3-80 | 19,700 | 1-61 | 9,740 |
| 24 | 11-55 | 66,300 | 5-50 | 28,300 | 3-60 | 18,700 | 3-40 | 17,800 | 3-75 | 19,400 | 1-61 | 9,740 |
| 25 | 11-15 | 63,500 | 5-40 | 27,700 | 3-65 | 18,900 | 3-40 | 17,800 | 3-70 | 19,200 | 1-61 | 9,740 |
| 26 | 10-90 | 61,800 | 5-30 | 27,200 | 3-55 | 18,500 | 3-35 | 17,500 | 3-70 | 19,200 | 1-60 | 9,700 |
| 27 | 10-60 | 59,700 | 5-20 | 26,700 | 3-60 | 18,700 | 3-30 | 17,300 | 3-65 | 18,900 | 1-55 | 9,500 |
| 28 | 10-30 | 57,600 | 5-10 | 26,200 | 3-65 | 18,900 | 3-30 | 17,300 | 3-55 | 18,500 | 1-55 | 9,500 |
| 29 | 9-95 | 55,200 | 5-00 | 25,700 | 3-65 | 18,900 | 3-25 | 17,000 | 3-50 | 18,300 | 1-55 | 9,500 |
| 30 | 9-65 | 53,200 | 4-90 | 25,100 | 3-60 | 18,700 | 3-20 | 16,800 | 3-50 | 18,300 | 1-50 | 9,300 |
| 31 | 9-45 | 51,900 | 4-80 | 24,600 | ..... | ..... | 3-25 | 17,000 | ..... | ..... | 1-50 | 9,300 |

MONTHLY DISCHARGE of Kootenay River near Nelson, for 1914.

(Drainage area, 17,700 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| January | 11,800 | 8,050 | 10,200 | 6-58 | 0-67 | 627,000 | ..... |
| February | 9,700 | 7,150 | 7,730 | 0-44 | 0-46 | 42,960 | ..... |
| March | 11,400 | 7,450 | 9,010 | 0-51 | 0-59 | 554,000 | ..... |
| April | 35,500 | 10,900 | 21,900 | 1-24 | 1-38 | 1,300,000 | C |
| May | 78,400 | 36,100 | 60,100 | 3-40 | 3-92 | 3,700,000 | B |
| June | 89,200 | 76,700 | 84,100 | 4-75 | 5-30 | 5,000,000 | B |
| July | 82,400 | 51,900 | 73,900 | 4-18 | 4-82 | 4,540,000 | B |
| August | 50,500 | 24,600 | 34,000 | 1-92 | 2-21 | 2,090,000 | C |
| September | 24,100 | 18,300 | 20,000 | 1-13 | 1-26 | 1,190,000 | C |
| October | 18,900 | 16,800 | 17,700 | 1-00 | 1-15 | 1,090,000 | C |
| November | 22,600 | 17,300 | 20,500 | 1-16 | 1-29 | 1,220,000 | C |
| December | 18,000 | 9,300 | 12,500 | 0-71 | 0-82 | 769,000 | C |

SESSIONAL PAPER No. 25e

KOOTENAY RIVER NEAR GLADE (3014).

Location.—Ten miles from the mouth below the mouth of Slovan river; 16 miles from Nelson at the ferry cable near Glade B.C. Nelson district.

Records Available.—July, 1913, to December, 1914.

Climatic Conditions.—The climatic conditions are similar to those at Nelson. (See Kootenay river near Nelson.) The river is open all the year round.

Gauge.—Four 5-foot gauges reading from 0 to 5 feet, 5 to 10 feet 10 to 15 feet and 15 to 20 feet are used and read twice daily by F. Striloiff of Glade.

Channel.—The channel is straight for one half mile above and below section and very uniform. There are riffles 1,000 yards above and below the section which is ideal for metering purposes.

Discharge Measurements.—Seven measurements in 1913 and seven in 1914 were made from a cable car used on the ferry cable.

Accuracy.—Accurate gauge readings are obtained, accurate measurements were taken and the gauge height-discharge curve is very satisfactory. The results at this station are considered to be within 5 per cent.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Glade, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-55 | 8,700 | 2-25 | 11,400 | 1-55 | 8,700 | 2-7 | 13,100 | 8-10 | 43,200 | 13-4 | 88,600 |
| 2 | 1-55 | 8,700 | 2-25 | 11,400 | 1-45 | 8,330 | 2-7 | 13,100 | 8-40 | 45,400 | 13-6 | 90,600 |
| 3 | 1-55 | 8,700 | 2-35 | 11,800 | 1-45 | 8,330 | 2-7 | 13,100 | 8-80 | 48,400 | 14-1 | 95,600 |
| 4 | 1-65 | 9,100 | 2-35 | 11,800 | 1-55 | 8,700 | 2-8 | 13,500 | 8-95 | 49,500 | 14-2 | 96,600 |
| 5 | 1-65 | 9,100 | 2-15 | 11,000 | 1-55 | 8,700 | 2-7 | 13,100 | 9-35 | 52,600 | 14-2 | 96,600 |
| 6 | 1-85 | 9,900 | 2-05 | 10,700 | 1-55 | 8,700 | 2-95 | 14,200 | 9-50 | 53,800 | 14-2 | 96,600 |
| 7 | 2-35 | 11,800 | 1-85 | 9,900 | 1-55 | 8,700 | 3-25 | 15,400 | 9-5 | 53,800 | 14-1 | 95,600 |
| 8 | 2-50 | 12,300 | 1-85 | 9,900 | 1-55 | 8,700 | 3-45 | 16,200 | 9-85 | 56,600 | 14-0 | 94,600 |
| 9 | 2-45 | 12,100 | 1-75 | 9,500 | 1-60 | 8,900 | 3-55 | 16,600 | 10-1 | 58,600 | 13-9 | 93,600 |
| 10 | 2-50 | 12,300 | 1-75 | 9,500 | 1-60 | 8,900 | 3-8 | 17,700 | 10-3 | 60,300 | 13-95 | 94,100 |
| 11 | 2-65 | 12,900 | 1-75 | 9,500 | 1-60 | 8,900 | 3-95 | 18,400 | 10-4 | 61,100 | 13-8 | 92,600 |
| 12 | 2-65 | 12,900 | 1-65 | 9,100 | 1-60 | 8,900 | 4-15 | 19,250 | 10-6 | 62,800 | 13-75 | 92,100 |
| 13 | 2-65 | 12,900 | 1-65 | 9,100 | 1-60 | 8,900 | 4-50 | 20,900 | 10-8 | 64,500 | 13-75 | 92,100 |
| 14 | 2-65 | 12,900 | 1-65 | 9,100 | 1-60 | 8,900 | 4-85 | 22,600 | 11-05 | 66,600 | 13-85 | 93,100 |
| 15 | 2-65 | 12,900 | 1-65 | 9,100 | 1-70 | 9,300 | 5-35 | 25,500 | 11-35 | 69,400 | 14-05 | 95,100 |
| 16 | 2-70 | 13,100 | 1-65 | 9,100 | 1-80 | 9,700 | 5-75 | 27,800 | 11-75 | 73,000 | 14-2 | 96,600 |
| 17 | 2-75 | 13,400 | 1-55 | 8,700 | 1-80 | 9,700 | 5-90 | 28,700 | 11-95 | 74,900 | 14-4 | 98,600 |
| 18 | 2-65 | 12,900 | 1-55 | 8,700 | 2-10 | 10,900 | 6-10 | 29,900 | 12-15 | 76,800 | 14-55 | 100,000 |
| 19 | 2-55 | 12,500 | 1-55 | 8,700 | 2-10 | 10,900 | 6-30 | 31,200 | 12-30 | 78,200 | 14-7 | 102,000 |
| 20 | 2-55 | 12,500 | 1-55 | 8,700 | 2-30 | 11,600 | 6-80 | 34,300 | 12-50 | 80,100 | 14-7 | 102,000 |
| 21 | 2-65 | 12,900 | 1-55 | 8,700 | 2-30 | 11,600 | 6-80 | 34,300 | 12-7 | 81,900 | 14-65 | 102,000 |
| 22 | 2-55 | 12,500 | 1-55 | 8,700 | 2-36 | 11,800 | 6-90 | 35,000 | 12-9 | 83,800 | 14-6 | 101,000 |
| 23 | 2-45 | 12,200 | 1-45 | 8,330 | 2-40 | 12,000 | 7-20 | 37,000 | 13-05 | 85,200 | 14-5 | 99,600 |
| 24 | 2-45 | 12,200 | 1-45 | 8,330 | 2-50 | 12,300 | 7-40 | 38,300 | 13-3 | 87,600 | 14-4 | 98,600 |
| 25 | 2-45 | 12,200 | 1-45 | 8,330 | 2-60 | 12,700 | 7-50 | 39,000 | 13-45 | 89,100 | 14-3 | 97,600 |
| 26 | 2-35 | 11,800 | 1-45 | 8,330 | 2-70 | 13,100 | 7-80 | 41,100 | 13-5 | 89,600 | 14-3 | 97,600 |
| 27 | 2-35 | 11,800 | 1-45 | 8,330 | 2-70 | 13,100 | 7-80 | 41,100 | 13-45 | 89,100 | 14-2 | 96,600 |
| 28 | 2-25 | 11,400 | 1-45 | 8,330 | 2-70 | 13,100 | 7-80 | 41,100 | 13-45 | 89,100 | 14-05 | 95,100 |
| 29 | 2-25 | 11,400 | ..... | ..... | 2-70 | 13,100 | 7-90 | 41,800 | 13-35 | 88,100 | 13-95 | 94,100 |
| 30 | 2-15 | 11,000 | ..... | ..... | 2-60 | 12,700 | 8-00 | 42,500 | 13-25 | 87,200 | 13-85 | 93,100 |
| 31 | 2-15 | 11,000 | ..... | ..... | 2-60 | 12,700 | ..... | ..... | 13-2 | 86,700 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River near Glade, for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 13-85 | 93,100 | 9-95 | 57,400 | 5-5 | 26,400 | 4-4 | 20,400 | 4-15 | 19,200 | 4-2 | 19,500 |
| 2..... | 13-8 | 92,600 | 9-8 | 56,200 | 5-4 | 25,800 | 4-4 | 20,400 | 4-25 | 19,800 | 4-1 | 19,000 |
| 3..... | 13-85 | 93,100 | 9-6 | 54,600 | 5-3 | 25,200 | 4-35 | 20,200 | 4-35 | 20,200 | 4-1 | 19,000 |
| 4..... | 13-85 | 93,100 | 9-4 | 53,000 | 5-2 | 24,600 | 4-3 | 20,000 | 4-45 | 20,600 | 4-1 | 19,000 |
| 5..... | 13-85 | 93,100 | 9-2 | 51,400 | 5-1 | 24,100 | 4-3 | 20,000 | 4-75 | 22,200 | 4-0 | 18,600 |
| 6..... | 13-85 | 93,100 | 9-0 | 49,900 | 5-0 | 23,500 | 4-3 | 20,000 | 4-9 | 22,900 | 4-0 | 18,600 |
| 7..... | 13-9 | 93,600 | 8-8 | 48,400 | 4-9 | 22,900 | 4-25 | 19,800 | 5-0 | 23,500 | 4-0 | 18,600 |
| 8..... | 13-85 | 93,100 | 8-7 | 47,600 | 4-8 | 22,400 | 4-20 | 19,500 | 5-2 | 24,600 | 3-8 | 17,700 |
| 9..... | 13-75 | 92,100 | 8-6 | 46,800 | 4-7 | 21,900 | 4-20 | 19,500 | 5-1 | 24,100 | 3-7 | 17,900 |
| 10..... | 13-7 | 91,600 | 8-4 | 45,400 | 4-6 | 21,400 | 4-20 | 19,500 | 5-3 | 25,200 | 3-6 | 16,900 |
| 11..... | 13-65 | 91,100 | 8-2 | 43,900 | 4-5 | 20,900 | 4-2 | 19,500 | 5-3 | 25,200 | 3-5 | 16,400 |
| 12..... | 13-5 | 89,600 | 8-0 | 42,500 | 4-5 | 20,900 | 4-1 | 19,000 | 5-3 | 25,200 | 3-3 | 15,600 |
| 13..... | 13-5 | 89,600 | 7-9 | 41,800 | 4-4 | 20,400 | 4-0 | 18,600 | 5-4 | 25,800 | 3-1 | 14,800 |
| 14..... | 13-45 | 89,100 | 7-7 | 40,400 | 4-2 | 19,500 | 4-0 | 18,600 | 5-3 | 25,200 | 3-0 | 14,400 |
| 15..... | 13-4 | 88,600 | 7-5 | 39,000 | 4-2 | 19,500 | 4-0 | 18,600 | 5-3 | 25,200 | 2-9 | 14,000 |
| 16..... | 13-35 | 88,100 | 7-3 | 37,700 | 4-2 | 19,500 | 4-0 | 18,600 | 5-3 | 25,200 | 2-8 | 13,500 |
| 17..... | 13-15 | 86,200 | 7-1 | 36,300 | 4-2 | 19,500 | 3-9 | 18,100 | 5-2 | 24,600 | 2-7 | 13,100 |
| 18..... | 13-0 | 84,700 | 7-0 | 35,700 | 4-25 | 18,800 | 4-1 | 19,000 | 5-1 | 24,100 | 2-6 | 12,700 |
| 19..... | 12-85 | 83,300 | 7-0 | 35,700 | 4-35 | 20,200 | 4-2 | 19,500 | 5-0 | 23,500 | 2-6 | 12,700 |
| 20..... | 12-6 | 81,000 | 6-7 | 33,400 | 4-35 | 20,200 | 4-1 | 19,000 | 4-85 | 22,600 | 2-4 | 12,000 |
| 21..... | 12-4 | 79,100 | 6-5 | 32,400 | 4-30 | 20,000 | 4-2 | 19,500 | 4-7 | 21,900 | 2-3 | 11,600 |
| 22..... | 12-15 | 76,800 | 6-4 | 31,800 | 4-3 | 20,000 | 4-2 | 19,500 | 4-7 | 21,900 | 2-3 | 11,600 |
| 23..... | 12-0 | 75,400 | 6-4 | 31,800 | 4-3 | 20,000 | 4-2 | 19,500 | 4-55 | 21,200 | 2-2 | 11,200 |
| 24..... | 11-75 | 73,000 | 6-4 | 31,800 | 4-3 | 20,000 | 4-2 | 19,500 | 4-5 | 20,900 | 2-2 | 11,200 |
| 25..... | 11-35 | 69,400 | 6-3 | 31,200 | 4-35 | 20,200 | 4-15 | 19,200 | 4-4 | 20,400 | 2-2 | 11,200 |
| 26..... | 11-3 | 68,900 | 6-1 | 29,900 | 4-4 | 20,400 | 4-1 | 19,000 | 4-4 | 20,400 | 2-2 | 11,200 |
| 27..... | 11-1 | 67,100 | 6-0 | 29,300 | 4-4 | 20,400 | 4-1 | 19,000 | 4-4 | 20,400 | 2-15 | 11,000 |
| 28..... | 10-35 | 60,700 | 5-9 | 28,700 | 4-4 | 20,400 | 4-1 | 19,000 | 4-25 | 19,800 | 2-10 | 10,900 |
| 29..... | 10-3 | 60,300 | 5-8 | 28,100 | 4-45 | 20,600 | 4-1 | 19,000 | 4-3 | 20,000 | 2-1 | 10,900 |
| 30..... | 10-3 | 60,300 | 5-7 | 27,500 | 4-4 | 20,400 | 4-1 | 19,000 | 4-3 | 20,000 | 2-0 | 10,500 |
| 31..... | 10-65 | 58,200 | 5-6 | 26,900 | ..... | ..... | 4-0 | 18,600 | ..... | ..... | 2-0 | 10,500 |

DISCHARGE MEASUREMENTS of Kootenay River near Glade, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|--------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| Jan. 13..... | C. E. Webb..... | 1,048 | 549 | 4,580 | 2-82 | 2-52 | 12,900 |
| Mar. 9..... | C. E. R..... | 1,672 | 530 | 4,000 | 2-22 | 1-57 | 8,900 |
| June 1..... | J. A. E..... | 1,909 | 696 | 11,370 | 7-79 | 13-35 | 88,600 |
| July 20..... | J. A. E., G. K. B..... | 1,909 | 685 | 10,800 | 7-54 | 12-60 | 81,400 |
| Aug. 11..... | C. E. R., D. O'B. G..... | 1,929 | 640 | 7,916 | 5-46 | 8-22 | 43,200 |
| Aug. 13..... | D. O'B. G., Lawley..... | 1,929 | 630 | 7,700 | 5-25 | 7-80 | 40,400 |
| Dec. 11..... | J. A. E., G. K. B..... | 1,909 | 556 | 5,020 | 3-42 | 3-45 | 17,200 |

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MONTHLY DISCHARGE of Kootenay River near Glade, for 1914.

(Drainage area, 19,100 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|----------------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January..... | 13,400 | 8,700 | 11,700 | 0.61 | 0.70 | 719,000 | A |
| February..... | 11,800 | 8,330 | 9,430 | 0.49 | 0.51 | 524,000 | A |
| March..... | 13,100 | 8,330 | 10,400 | 0.54 | 0.62 | 640,000 | A |
| April..... | 42,500 | 13,100 | 26,500 | 1.39 | 1.55 | 1,380,000 | A |
| May..... | 89,600 | 43,200 | 70,600 | 3.70 | 4.27 | 4,340,000 | A |
| June..... | 102,000 | 88,600 | 96,100 | 5.03 | 5.61 | 5,720,000 | A |
| July..... | 93,600 | 58,200 | 82,300 | 4.31 | 4.97 | 5,060,000 | A |
| August..... | 57,400 | 26,900 | 39,600 | 2.07 | 2.39 | 2,430,000 | C |
| September..... | 26,400 | 19,500 | 21,400 | 1.12 | 1.25 | 1,270,000 | A |
| October..... | 20,400 | 18,100 | 19,300 | 1.01 | 1.16 | 1,190,000 | A |
| November..... | 25,800 | 19,200 | 22,500 | 1.18 | 1.32 | 1,340,000 | A |
| December..... | 19,500 | 10,500 | 14,400 | 0.75 | 0.86 | 885,000 | A |

NAKUSP CREEK NEAR NAKUSP (3021.)

Location.—Station is located west of Brouse and near R. H. Baird's ranch, about 2 miles from Nakusp. Nelson district.

Records Available.—March 20th to December 31, 1914.

Climatic Conditions.—Similar to Kooskanax creek, q.v.

Gauge.—Vertical staff enamel gauge, about 40 feet below measuring section. Read twice a week. March to December, 1914, by Mr. R. H. Baird.

Channel.—Sandy, with vegetation, and subject to shift. Beaver dams of recent construction above the section have a marked effect on the channel.

Accuracy.—Beavers were working in the vicinity of the gauge. The gauge readings are infrequent. Although results are probably within 20 per cent, they are not guaranteed.

General.—Nakusp creek rises on the west slope of the Goat mountains and flows westward, emptying into Upper Arrow lakes about 1 mile below Nakusp. This creek drains an area of approximately 40 square miles. The probable future use of Nakusp creek waters is irrigation and domestic supply.

DISCHARGE MEASUREMENTS of Nakusp Creek near Nakusp, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge |
|--------------|---------------------------|-----------|--------|------------------|----------------|---------------|-----------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Mar. 20..... | C. E. Webb..... | 1048 | 20.5 | 13.9 | 2.25 | 1.8 | 31.3 |
| June 13..... | G. K. B..... | 1927 | 16.0 | 12.6 | 4.28 | 2.2 | 54.0 |
| " 21..... | G. K. B..... | 1927 | 16.0 | 11.4 | 4.01 | 2.2 | 45.8 |
| " 29..... | J. A. E..... | 1909 | 15.0 | 12.1 | 3.77 | 1.9 | 45.6 |
| Aug. 12..... | J. A. E..... | 1909 | 15.0 | 8.35 | 2.53 | 1.5 | 21.2 |
| Sept. 3..... | J. A. E. and C. E. R..... | 1927 | 17.0 | 14.7 | 0.87 | 1.38 | 12.9 |
| Oct. 28..... | J. A. E..... | 1909 | 14.5 | 6.72 | 3.13 | 1.65 | 21.0 |
| Nov. 21..... | J. A. E., O. J. B..... | 1909 | 15.0 | 9.85 | 2.82 | 1.8 | 28.7 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Nakusp Creek River near Nakusp,
for 1914.

| Day. | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | 29.4 | | 69.0 | 2.3 | 55.3 |
| 2 | | | 1.8 | 30.0 | | 77.0 | | 53.0 |
| 3 | | | | 30.7 | 2.8 | 85.4 | | 51.0 |
| 4 | | | | 31.4 | | 82.0 | 2.2 | 49.9 |
| 5 | | | 1.85 | 32.2 | | 79.0 | | 49.9 |
| 6 | | | | 35.3 | | 76.0 | | 49.9 |
| 7 | | | | 38.4 | 2.6 | 73.0 | 2.2 | 49.9 |
| 8 | | | | 41.5 | | 75.0 | | 49.9 |
| 9 | | | 2.1 | 44.5 | | 77.0 | | 49.9 |
| 10 | | | | 49.9 | 2.7 | 79.0 | | 49.9 |
| 11 | | | | 49.9 | | 77.0 | 2.2 | 49.9 |
| 12 | | | 2.3 | 55.3 | | 75.0 | | 49.9 |
| 13 | | | | 57.6 | 2.6 | 73.0 | | 49.9 |
| 14 | | | | 59.0 | | 71.0 | 2.2 | 49.9 |
| 15 | | | 2.4 | 61.0 | | 70.0 | | 48.5 |
| 16 | | | | 69.0 | | 68.0 | | 47.0 |
| 17 | | | | 77.0 | 2.5 | 67.0 | | 46.0 |
| 18 | | | | 84.5 | | 64.0 | 2.1 | 44.5 |
| 19 | | | 2.9 | 91.9 | | 61.0 | | 47.0 |
| 20 | 1.8 | 30.0 | | 89.8 | | 58.0 | | 48.5 |
| 21 | | 30.0 | | 87.6 | 2.3 | 55.3 | 2.2 | 49.9 |
| 22 | | 30.0 | 2.8 | 85.4 | | 55.3 | | 48.0 |
| 23 | | 30.0 | | 82.0 | | 55.3 | | 47.0 |
| 24 | 1.8 | 30.0 | | 79.0 | 2.3 | 55.3 | | 46.0 |
| 25 | | 29.4 | | 76.0 | | 57.0 | 1.9 | 34.5 |
| 26 | | 28.5 | 2.6 | 73.0 | | 58.0 | | 34.5 |
| 27 | 1.75 | 27.8 | | 70.0 | | 59.0 | | 34.5 |
| 28 | | 27.8 | | 67.0 | 2.4 | 61.0 | 1.9 | 34.5 |
| 29 | 1.75 | 27.8 | | 64.0 | | 59.0 | 1.9 | 34.5 |
| 30 | | 28.3 | 2.4 | 61.0 | | 58.0 | 1.9 | 34.5 |
| 31 | | 28.8 | | | | 57.0 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Nakusp Creek River near Nakusp, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 34.5 | | 21.2 | | 14.9 | | 27.0 | | 30.0 | | 30.0 |
| 2 | 1.9 | 34.5 | 1.6 | 21.2 | | 14.1 | | 24.1 | 1.8 | 30.0 | 1.8 | 30.0 |
| 3 | | 34.5 | | 21.2 | | 13.4 | 1.60 | 21.2 | | 30.0 | | 28.9 |
| 4 | | 34.5 | | 21.2 | 1.38 | 12.7 | | 22.6 | 1.8 | 30.0 | | 27.7 |
| 5 | 1.9 | 34.5 | 1.6 | 21.2 | | 15.5 | | 22.6 | | 30.0 | | 26.6 |
| 6 | | 34.5 | | 21.2 | | 18.4 | 1.70 | 25.5 | | 30.0 | 1.7 | 25.5 |
| 7 | | 34.5 | 1.6 | 21.2 | 1.6 | 21.2 | | 24.4 | 1.8 | 30.0 | | 25.5 |
| 8 | | 34.5 | 1.6 | 21.2 | | 22.1 | | 23.4 | | 30.0 | | 25.5 |
| 9 | 1.9 | 34.5 | | 20.2 | | 22.9 | | 22.3 | | 33.1 | | 25.5 |
| 10 | | 34.5 | | 19.1 | | 23.8 | 1.60 | 21.2 | | 36.3 | 1.7 | 25.5 |
| 11 | | 34.5 | | 18.1 | | 24.6 | | 22.3 | 2.0 | 39.4 | | 25.0 |
| 12 | | 34.5 | 1.5 | 17.1 | 1.7 | 25.5 | | 23.4 | | 39.4 | | 25.0 |
| 13 | 1.9 | 34.5 | | 16.5 | 1.7 | 25.5 | | 24.4 | | 39.4 | 2.4 | 25.0 |
| 14 | | 33.0 | | 16.0 | | 25.5 | 1.7 | 25.5 | | 39.4 | | 24.0 |
| 15 | | 32.0 | | 15.5 | | 25.5 | | 24.4 | 2.0 | 39.4 | | 24.0 |
| 16 | | 31.0 | | 15.0 | 1.7 | 25.5 | | 23.4 | | 36.3 | | 23.0 |
| 17 | 1.8 | 30.0 | | 14.5 | 1.75 | 27.8 | | 22.3 | | 33.1 | 2.2 | 23.0 |
| 18 | | 28.0 | | 14.0 | | 28.0 | 1.6 | 21.2 | 1.8 | 30.0 | | 24.0 |
| 19 | | 27.0 | 1.4 | 13.4 | | 29.0 | | 22.3 | | 30.0 | 2.0 | 24.0 |
| 20 | 1.7 | 25.5 | | 13.4 | | 30.0 | | 23.4 | | 30.0 | | 25.0 |
| 21 | | 23.4 | | 13.4 | 1.8 | 30.0 | | 24.4 | 1.8 | 30.0 | | 25.0 |
| 22 | 1.6 | 21.2 | 1.4 | 13.4 | | 27.0 | 1.7 | 25.5 | | 30.0 | | 25.0 |
| 23 | | 21.2 | | 13.9 | | 24.1 | | 25.5 | | 30.0 | 1.7 | 25.5 |
| 24 | | 21.2 | | 14.3 | 1.60 | 21.2 | | 25.5 | | 30.0 | | 26.0 |
| 25 | | 21.2 | | 14.7 | | 19.2 | 1.7 | 25.5 | 1.8 | 30.0 | | 27.0 |
| 26 | 1.6 | 21.2 | 1.45 | 15.2 | 1.50 | 17.1 | | 25.5 | | 30.0 | | 28.0 |
| 27 | | 21.2 | | 15.8 | | 20.0 | 1.7 | 25.5 | | 30.0 | | 29.0 |
| 28 | | 21.2 | | 16.5 | | 23.0 | | 26.0 | | 30.0 | 1.8 | 30.0 |
| 29 | 1.6 | 21.2 | 1.5 | 17.1 | | 26.0 | | 27.0 | 1.8 | 30.0 | | 30.0 |
| 30 | | 21.2 | | 16.4 | 1.80 | 30.0 | | 28.0 | | 30.0 | | 30.0 |
| 31 | | 21.2 | | 15.6 | | | | 29.0 | | | | 30.0 |

MONTHLY DISCHARGE of Nakusp Creek near Nakusp. for 1914.

(Drainage area, 40 square miles.)

| | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| April | 91.9 | 29.4 | 60.1 | 1.50 | 1.67 | 3,580 |
| May | 85.4 | 55.3 | 67.3 | 1.68 | 1.94 | 4,140 |
| June | 55.3 | 34.5 | 46.3 | 1.16 | 1.29 | 2,760 |
| July | 34.5 | 21.2 | 28.7 | 0.72 | 0.83 | 1,760 |
| August | 21.2 | 13.4 | 17.1 | 0.43 | 0.50 | 1,050 |
| September | 30.0 | 12.7 | 22.8 | 0.37 | 0.44 | 1,360 |
| October | 20.0 | 21.2 | 24.3 | 0.61 | 0.70 | 1,430 |
| November | 30.4 | 30.0 | 32.2 | 0.81 | 0.90 | 1,920 |
| December | 30.0 | | 26.4 | 0.66 | 0.76 | 1,620 |

PEND D'OREILLE RIVER NEAR WANETA (3017).

Location.—The gauging section is located 9 miles above the mouth at Waneta, near Mr. A. G. Lang's ranch.

Records Available.—May, 1913, to December, 1914.

Climatic Conditions.—The precipitation is light over practically the whole Pend d'Oreille drainage. At the mouth (Waneta), from December 1, 1913, to November 30, 1914, the precipitation was 27.2 inches. The summers are hot and fairly dry. The winters are mild, the temperature seldom going below zero. The river in Canada seldom freezes over, and frazil ice is not often a serious factor.

Gauge.—Staff gauges are used and read two or three times a week, except during high water, when they are read daily, by Mr. A. C. Lang.

Channel.—The Pend d'Oreille, during its course through Canada, is very torrentuous, and there is no favourable metering section. The section chosen is very fast in high water, satisfactory at low water stages, and appears to have a permanent control.

Discharge Measurements.—Five measurements were made in 1914, and twelve in 1912 and 1913.

Accuracy.—The gauge readings are somewhat infrequent; the stream is flashy during May and June. The measurements, except at low water, are only surface measurements. The results in May and June cannot be guaranteed closer than 15 per cent and, during the other months, 10 per cent.

DISCHARGE MEASUREMENTS of Pend D'Oreille River near Waneta B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| June 11..... | C. E. R., W. J. B..... | 1048 | 440 | 12,400 | 10.37 | 26.8 | 128,300 |
| Nov. 6..... | C. E. R., C. N. W..... | 1048 | 260 | 3,350 | 3.32 | 3.2 | 11,200 |
| 1914. | | | | | | | |
| April 18..... | C. E. W., D. O'B. G..... | 1048 | 284 | 4,380 | 4.66 | 6.05 | 20,200 |
| June 3..... | J. A. R., G. K. B..... | 1909 | 380 | 9,260 | 3.52 | 18.95 | 78,900 |
| July 18..... | J. A. R., D. O'B. G..... | 1909 | 310 | 6,350 | 6.08 | 10.6 | 38,600 |
| Nov. 12..... | J. A. R., G. K. B..... | 1909 | 285 | 4,860 | 4.63 | 5.6 | 22,500 |

(All areas recomputed from soundings of January and February, 1915.)

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DAILY GAUGE HEIGHT AND DISCHARGE of Pend D'Oreille River near Waneta,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-1 | 10,600 | 2-9 | 11,900 | ..... | 12,100 | ..... | 18,000 | 12-2 | 44,000 | ..... | 75,800 |
| 2 | 2-1 | 10,600 | ..... | 11,600 | ..... | 12,300 | ..... | 17,000 | ..... | 44,300 | 18-6 | 76,000 |
| 3 | 2-1 | 10,600 | 2-5 | 11,300 | 3-1 | 12,600 | 5-1 | 17,900 | ..... | 44,600 | 18-9 | 77,800 |
| 4 | 2-3 | 10,900 | ..... | 10,800 | ..... | 12,800 | ..... | 18,400 | ..... | 44,900 | ..... | 76,800 |
| 5 | 2-5 | 11,300 | ..... | 10,300 | ..... | 12,900 | ..... | 18,900 | 12-5 | 45,200 | ..... | 75,900 |
| 6 | 2-8 | 11,960 | 1-7 | 9,800 | 3-3 | 13,000 | ..... | 19,400 | ..... | 46,300 | 18-4 | 75,000 |
| 7 | 2-9 | 12,100 | ..... | 10,000 | ..... | 13,100 | 5-8 | 20,000 | ..... | 47,400 | ..... | 75,000 |
| 8 | 3-1 | 12,600 | ..... | 10,200 | 3-4 | 13,200 | ..... | 20,800 | 13-2 | 48,500 | ..... | 75,000 |
| 9 | 3-3 | 13,000 | ..... | 10,400 | ..... | 13,300 | ..... | 21,600 | ..... | 49,500 | 18-4 | 75,000 |
| 10 | 3-3 | 13,000 | 2-2 | 10,700 | 3-5 | 13,400 | ..... | 22,500 | ..... | 50,500 | ..... | 74,200 |
| 11 | 3-3 | 13,000 | ..... | 10,800 | ..... | 13,500 | 6-9 | 23,400 | ..... | 51,500 | ..... | 73,500 |
| 12 | 3-3 | 13,000 | ..... | 10,900 | ..... | 13,600 | 7-0 | 23,800 | 14-1 | 52,600 | ..... | 72,800 |
| 13 | 3-3 | 13,000 | ..... | 11,000 | ..... | 13,600 | ..... | 25,200 | ..... | 55,200 | 17-9 | 72,100 |
| 14 | 3-3 | 13,000 | 2-4 | 11,100 | ..... | 13,700 | 7-8 | 26,600 | ..... | 57,800 | ..... | 71,500 |
| 15 | 3-3 | 13,000 | ..... | 11,200 | ..... | 13,800 | ..... | 27,700 | 15-7 | 60,500 | ..... | 71,000 |
| 16 | 3-2 | 12,800 | 2-5 | 11,300 | 3-7 | 13,900 | ..... | 28,800 | ..... | 61,300 | ..... | 70,500 |
| 17 | 3-2 | 12,800 | ..... | 11,300 | ..... | 14,400 | ..... | 30,000 | ..... | 62,100 | 17-5 | 70,000 |
| 18 | 3-2 | 12,800 | ..... | 11,200 | ..... | 15,900 | 9-1 | 31,200 | ..... | 62,900 | ..... | 68,500 |
| 19 | 3-2 | 12,800 | ..... | 11,100 | ..... | 15,500 | ..... | 32,000 | ..... | 63,700 | ..... | 67,000 |
| 20 | 3-2 | 12,800 | 2-4 | 11,100 | 4-5 | 16,100 | ..... | 32,800 | 16-5 | 64,500 | 16-7 | 65,600 |
| 21 | 3-1 | 12,600 | ..... | 11,100 | ..... | 16,500 | 9-7 | 33,600 | ..... | 66,500 | ..... | 64,500 |
| 22 | 3-1 | 12,600 | ..... | 11,200 | ..... | 16,900 | ..... | 34,500 | ..... | 68,500 | ..... | 63,500 |
| 23 | 3-1 | 12,600 | ..... | 11,300 | 4-9 | 17,300 | ..... | 35,400 | 17-6 | 70,600 | 16-1 | 62,500 |
| 24 | 3-1 | 12,600 | 2-5 | 11,300 | ..... | 17,600 | ..... | 36,300 | ..... | 71,300 | ..... | 61,700 |
| 25 | 3-1 | 12,600 | ..... | 11,300 | ..... | 18,000 | 10-6 | 37,200 | ..... | 72,000 | ..... | 60,900 |
| 26 | 3-1 | 12,600 | ..... | 11,500 | ..... | 18,400 | ..... | 38,000 | 18-0 | 72,700 | ..... | 60,200 |
| 27 | 3-1 | 12,600 | ..... | 11,700 | 5-4 | 18,800 | ..... | 38,800 | ..... | 73,100 | 15-5 | 59,500 |
| 28 | 3-0 | 12,300 | 2-8 | 11,900 | ..... | 18,600 | 11-2 | 39,600 | ..... | 73,500 | ..... | 58,800 |
| 29 | 3-0 | 12,300 | ..... | ..... | ..... | 18,400 | ..... | 41,000 | ..... | 74,000 | ..... | 57,500 |
| 30 | 3-0 | 12,300 | ..... | ..... | 5-21 | 18,200 | ..... | 42,500 | 18-3 | 74,500 | ..... | 56,500 |
| 31 | 3-0 | 12,300 | ..... | ..... | ..... | 18,100 | ..... | ..... | 18-5 | 75,500 | 14-7 | 55,500 |

DAILY GAUGE HEIGHT AND DISCHARGE of Pend D'Oreille River near Waneta, for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 54,700 | 7-5 | 25,600 | | 12,800 | | 11,300 | | 16,000 | 6-0 | 20,600 |
| 2 | | 54,000 | | 24,000 | 3-1 | 12,600 | | 11,430 | 4-8 | 17,000 | | 20,500 |
| 3 | | 53,300 | | 24,430 | | 12,300 | 2-6 | 11,500 | | 17,300 | | 20,400 |
| 4 | 14-1 | 52,600 | 7-0 | 23,800 | | 12,100 | 2-6 | 11,500 | | 17,600 | 5-9 | 20,300 |
| 5 | | 51,900 | | 23,300 | 2-8 | 11,900 | | 11,500 | | 18,000 | | 20,000 |
| 6 | | 49,500 | | 22,800 | | 11,800 | | 11,500 | | 18,400 | | 19,700 |
| 7 | 13-1 | 48,000 | | 22,300 | | 11,800 | 2-6 | 11,500 | 5-4 | 18,800 | 5-6 | 19,400 |
| 8 | | 47,000 | 6-4 | 21,800 | 2-7 | 11,700 | | 11,500 | | 18,900 | | 19,200 |
| 9 | | 46,000 | | 21,100 | | 11,500 | | 11,600 | | 19,000 | | 19,000 |
| 10 | | 45,000 | | 20,400 | | 11,300 | 2-7 | 11,700 | 5-5 | 19,100 | 5-4 | 18,800 |
| 11 | 12-2 | 44,000 | 5-7 | 19,700 | | 11,100 | | 11,800 | | 19,200 | | 17,900 |
| 12 | | 43,000 | | 19,100 | 2-3 | 10,900 | | 11,900 | | 19,300 | | 17,000 |
| 13 | | 42,100 | | 18,600 | | 10,900 | 2-9 | 12,100 | | 19,500 | 4-5 | 16,100 |
| 14 | 11-6 | 41,200 | | 18,100 | | 11,000 | | 12,100 | | 19,700 | | 15,500 |
| 15 | | 40,200 | 5-0 | 17,600 | 2-4 | 11,100 | | 12,200 | 5-7 | 20,000 | | 14,900 |
| 16 | | 39,200 | | 17,100 | | 11,300 | | 12,300 | | 20,300 | | 14,400 |
| 17 | | 38,200 | | 16,600 | | 11,500 | 3-0 | 12,300 | | 20,600 | 3-7 | 13,900 |
| 18 | 10-6 | 37,200 | 4-5 | 16,100 | | 11,700 | | 12,600 | 6-1 | 20,900 | | 13,700 |
| 19 | | 36,100 | | 15,800 | 2-8 | 11,900 | | 13,000 | | 21,100 | | 13,500 |
| 20 | | 35,000 | | 15,500 | | 11,900 | 3-5 | 13,400 | | 21,300 | | 13,300 |
| 21 | 9-8 | 34,000 | | 15,200 | | 11,800 | | 13,500 | 6-3 | 21,500 | 3-4 | 13,200 |
| 22 | | 33,200 | 4-1 | 15,000 | 2-7 | 11,700 | | 13,700 | | 21,400 | | 13,100 |
| 23 | | 32,400 | | 14,700 | | 11,700 | 3-7 | 13,900 | | 21,300 | | 13,000 |
| 24 | | 31,600 | | 14,400 | | 11,600 | | 14,100 | 6-2 | 21,200 | | 12,900 |
| 25 | 9-0 | 30,800 | | 14,100 | | 11,500 | | 14,300 | | 21,100 | 5-2 | 12,800 |
| 26 | | 29,900 | 3-7 | 13,900 | 2-6 | 11,500 | | 14,500 | | 21,000 | | 12,800 |
| 27 | | 29,000 | | 13,600 | | 11,500 | 3-9 | 14,500 | 6-1 | 20,900 | | 12,700 |
| 28 | 8-3 | 28,100 | 3-5 | 13,400 | | 11,400 | | 14,600 | | 20,800 | | 12,600 |
| 29 | | 27,400 | | 13,300 | | 11,300 | | 14,700 | | 20,700 | 3-1 | 12,600 |
| 30 | | 26,800 | 3-4 | 13,200 | 2-5 | 11,300 | | 14,800 | | 20,600 | | 12,600 |
| 31 | | 26,200 | | 13,000 | | | 4-1 | 15,000 | | | | 12,600 |

MONTHLY DISCHARGE of Pend D'Oreille River near Waneta, for 1914.

(Drainage area, 26,600 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage Area. | Total in Acre-feet. |
| January | 13,000 | 10,600 | 12,400 | 0-47 | 0-54 | 762,000 |
| February | 11,900 | 9,800 | 11,000 | 0-41 | 0-43 | 611,000 |
| March | 18,800 | 12,100 | 15,100 | 0-57 | 0-66 | 925,000 |
| April | 42,500 | 17,900 | 28,500 | 1-07 | 1-19 | 1,700,000 |
| May | 75,500 | 44,000 | 59,700 | 2-25 | 2-59 | 3,670,000 |
| June | 77,800 | 55,500 | 70,700 | 2-66 | 2-97 | 4,210,000 |
| July | 54,700 | 26,200 | 39,600 | 1-49 | 1-72 | 2,430,000 |
| August | 25,600 | 13,000 | 18,000 | 0-68 | 0-78 | 1,110,000 |
| September | 12,800 | 10,900 | 11,600 | 0-44 | 0-49 | 690,000 |
| October | 15,000 | 11,300 | 12,800 | 0-48 | 0-55 | 787,000 |
| November | 21,500 | 16,000 | 19,800 | 0-74 | 0-83 | 1,180,000 |
| December | 20,600 | 12,600 | 15,800 | 0-59 | 0-68 | 972,000 |

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SAWMILL CREEK NEAR NEW DENVER (3025).

Location.—Station is at bridge at mouth. Nelson district.

Records Available.—April to December, 1914.

Climatic Conditions.—The summers are hot and fairly dry, though sometimes the precipitation is heavy. The winters are quite mild, the thermometer seldom going below zero. (Slightly colder than Nelson.) The creek freezes over for a week or so at a time during a cold spell.

Gauge.—Vertical staff enamel gauge, read daily from April to December, 1914, by Mr. G. R. Nicol, of the Steelite Powder Company, Ltd.

Channel.—Very rocky. Not liable to shift.

Discharge Measurements.—Six measurements were made in 1914.

Accuracy.—The 1914 results should be within 15 per cent.

General.—Saw-mill creek rises on the slopes of the Valhalla and Ruby Mountains, and flows eastward, emptying into Slocan lake at a point directly opposite New Denver. It drains a well-timbered area of about 21 square miles. It has been utilized for power for a saw-mill at its mouth, and may in future be used to generate power for the Steelite Powder Company's plant, situated at the mouth.

DISCHARGE MEASUREMENTS of Saw-mill Creek near Slocan Lake opposite New Denver, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------|----------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914 | | | | | | | |
| April 16 | C. E. W., D. O'B. G. | 1,048 | 23.5 | 29.9 | 2.24 | 0.93 | 67.0 |
| May 13 | J. A. E., G. K. B. | 1,672 | 24.0 | 37.6 | 3.68 | 1.40 | 138.0 |
| June 16 | G. K. B. | 1,927 | 24.0 | 55.8 | 5.72 | 2.05 | 319.0 |
| July 8 | J. A. E., D. O'B. G. | 1,929 | 24.0 | 43.5 | 4.45 | 1.45 | 195.0 |
| Aug. 17 | D. O'B. G. | 1,929 | 24.0 | 27.4 | 1.67 | 0.6 | 43.9 |
| Nov. 4 | J. A. E., G. K. B. | 1,909 | 24.0 | 18.6 | 1.9 | 0.3 | 35.4 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE Saw-mill Creek, near
New Denver, B.C., for 1914.

| DAY. | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 1-10 | 99 | 1-85 | 216 |
| 2..... | | | 1-20 | 114 | 2-05 | 330 |
| 3..... | | | 1-3 | 133 | 2-55 | 482 |
| 4..... | | | 1-25 | 124 | 2-30 | 405 |
| 5..... | | | 1-15 | 106 | 1-85 | 270 |
| 6..... | | | 1-1 | 99 | 1-60 | 202 |
| 7..... | | | 1-1 | 99 | 1-42 | 158 |
| 8..... | | | 1-15 | 106 | 1-28 | 129 |
| 9..... | | | 1-3 | 133 | 1-28 | 129 |
| 10..... | | | 1-3 | 133 | 1-24 | 122 |
| 11..... | | | 1-3 | 133 | 1-28 | 129 |
| 12..... | | | 1-35 | 143 | 1-36 | 145 |
| 13..... | | | 1-45 | 165 | 1-59 | 200 |
| 14..... | | | 1-56 | 192 | 1-91 | 288 |
| 15..... | | | 1-71 | 232 | 2-07 | 336 |
| 16..... | | | 1-8 | 256 | 2-2 | 375 |
| 17..... | | | 1-7 | 229 | 2-3 | 405 |
| 18..... | | | 1-66 | 218 | 2-17 | 366 |
| 19..... | 0-9 | 71 | 1-54 | 187 | 1-95 | 300 |
| 20..... | 0-9 | 71 | 1-52 | 182 | 1-65 | 216 |
| 21..... | 0-85 | 66 | 1-53 | 184 | 1-5 | 177 |
| 22..... | 0-85 | 66 | 1-62 | 207 | 1-37 | 147 |
| 23..... | 0-9 | 71 | 1-71 | 232 | 1-27 | 127 |
| 24..... | 0-85 | 66 | 1-78 | 251 | 1-22 | 118 |
| 25..... | 0-9 | 71 | 1-72 | 234 | 1-28 | 129 |
| 26..... | 0-9 | 71 | 1-58 | 197 | 1-47 | 170 |
| 27..... | 0-9 | 71 | 1-44 | 163 | 1-48 | 172 |
| 28..... | 0-85 | 66 | 1-32 | 137 | 1-44 | 161 |
| 29..... | 0-85 | 66 | 1-28 | 129 | 1-52 | 182 |
| 30..... | 0-95 | 77.5 | 1-30 | 133 | 1-53 | 185 |
| 31..... | | | 1-40 | 153 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE Saw-mill Creek, near
New Denver, B.C., for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-7 | 229 | 0-92 | 73-6 | 0-34 | 25-4 | 0-60 | 43-0 | 0-41 | 29-7 | 0-2 | 17-0 |
| 2..... | 1-77 | 248 | 0-87 | 68-0 | 0-32 | 24-2 | 0-57 | 40-9 | 0-42 | 36-4 | 0-17 | 15-5 |
| 3..... | 1-88 | 279 | 0-86 | 67-0 | 0-33 | 24-8 | 0-54 | 38-8 | 0-40 | 29-0 | 0-2 | 17-0 |
| 4..... | 1-83 | 265 | 0-89 | 70-0 | 0-35 | 26-0 | 0-5 | 36-0 | 0-37 | 27-2 | 0-17 | 15-5 |
| 5..... | 1-78 | 251 | 0-78 | 59-0 | 0-32 | 24-2 | 0-45 | 32-5 | 0-41 | 29-7 | 0-17 | 15-5 |
| 6..... | 1-72 | 234 | 0-79 | 60-0 | 0-32 | 24-2 | 0-4 | 29-0 | 0-40 | 29-0 | 0-16 | 15-0 |
| 7..... | 1-62 | 207 | 0-83 | 64-0 | 0-30 | 23-0 | 0-4 | 29-0 | 0-37 | 27-2 | 0-15 | 14-5 |
| 8..... | 1-52 | 182 | 0-74 | 55-0 | 0-33 | 24-8 | 0-4 | 29-0 | 0-37 | 27-2 | 0-10 | 12-0 |
| 9..... | 1-48 | 172 | 0-62 | 44-6 | 0-31 | 23-6 | 0-37 | 27-2 | 0-35 | 26-0 | 0-15 | 14-5 |
| 10..... | 1-42 | 158 | 0-59 | 42-3 | 0-35 | 26-0 | 0-37 | 27-2 | 0-35 | 26-0 | Frozen | 13-0 |
| 11..... | 1-43 | 160 | 0-58 | 41-6 | 0-45 | 32-5 | 0-35 | 26-0 | 0-33 | 24-8 | ..... | 12-0 |
| 12..... | 1-47 | 170 | 0-61 | 43-8 | 0-38 | 27-8 | 0-33 | 24-8 | 0-35 | 26-0 | ..... | 11-0 |
| 13..... | 1-5 | 177 | 0-62 | 44-6 | 0-33 | 24-8 | 0-33 | 24-8 | 0-35 | 26-0 | ..... | 10-0 |
| 14..... | 1-49 | 175 | 0-58 | 41-6 | 0-30 | 23-0 | 0-3 | 23-0 | 0-3 | 23-0 | ..... | 10-0 |
| 15..... | 1-51 | 180 | 0-6 | 43-0 | 0-36 | 26-6 | 0-3 | 23-0 | 0-3 | 23-0 | ..... | 10-0 |
| 16..... | 1-25 | 125 | 0-58 | 41-6 | 0-30 | 23-0 | G-3 | 23-0 | 0-25 | 20-0 | ..... | 10-0 |
| 17..... | 1-22 | 118 | 0-62 | 44-6 | 0-34 | 25-4 | 0-48 | 34-6 | 0-27 | 21-2 | ..... | 10-0 |
| 18..... | 1-2 | 114 | 0-58 | 41-6 | 0-71 | 52-0 | C-5 | 36-0 | 0-27 | 21-2 | ..... | 10-0 |
| 19..... | 1-17 | 110 | 0-57 | 40-9 | 0-83 | 64-0 | 0-51 | 36-7 | 0-24 | 19-4 | ..... | 10-0 |
| 20..... | 1-20 | 114 | 0-55 | 39-5 | 0-62 | 44-6 | 0-5 | 36-0 | 0-25 | 20-0 | ..... | 10-0 |
| 21..... | 1-12 | 102 | 0-57 | 49-0 | 0-56 | 40-2 | 0-45 | 32-5 | 0-23 | 18-8 | ..... | 10-0 |
| 22..... | 1-02 | 87 | 0-56 | 40-2 | 0-54 | 38-8 | 0-42 | 30-4 | 0-2 | 19-0 | ..... | 10-0 |
| 23..... | 1-02 | 87 | 0-53 | 38-1 | 0-59 | 42-3 | 0-38 | 27-8 | 0-2 | 19-0 | ..... | 10-0 |
| 24..... | 1-02 | 87 | 0-48 | 34-6 | 0-62 | 44-6 | 0-37 | 27-2 | 0-2 | 19-0 | ..... | 10-0 |
| 25..... | 1-02 | 87 | 0-43 | 31-1 | 0-64 | 46-2 | 0-35 | 25-0 | 0-2 | 19-0 | ..... | 10-0 |
| 26..... | 0-95 | 77-5 | 0-43 | 31-1 | 0-80 | 61-0 | 0-34 | 25-4 | 0-23 | 18-8 | ..... | 10-0 |
| 27..... | 0-9 | 71 | 0-43 | 31-1 | 0-91 | 72-3 | 0-33 | 24-8 | 0-2 | 19-0 | ..... | 10-0 |
| 28..... | 0-87 | 68 | C-44 | 31-8 | 0-76 | 57-0 | 0-30 | 23-0 | 0-23 | 18-8 | ..... | 10-0 |
| 29..... | 0-92 | 73-6 | 0-44 | 31-8 | 0-68 | 49-4 | 0-30 | 23-0 | 0-23 | 18-8 | ..... | 10-0 |
| 30..... | 0-85 | 66 | 0-43 | 31-1 | 0-62 | 44-6 | 0-36 | 26-6 | 0-20 | 17-0 | ..... | 10-0 |
| 31..... | 0-9 | 71 | 0-39 | 28-4 | ..... | ..... | 0-37 | 27-2 | ..... | ..... | ..... | 10-0 |

MONTHLY DISCHARGE of Saw-mill Creek, near New Denver, for 1914.

(Drainage area, 21 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|---------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| May..... | 256 | 99 | 168 | 8-0 | 9-22 | 10,300 | D |
| June..... | 482 | 118 | 226 | 10-8 | 12-0 | 13,400 | D |
| July..... | 279 | 66 | 147 | 6-96 | 8-02 | 9,040 | D |
| August..... | 73-6 | 28-4 | 45 | 2-14 | 2-47 | 2,770 | C |
| September..... | 72-3 | 23-0 | 36-2 | 1-72 | 1-92 | 3,150 | C |
| October..... | 43-0 | 23-0 | 29-5 | 1-40 | 1-61 | 1,810 | C |
| November..... | 30-4 | 17-0 | 22-8 | 1-08 | 1-20 | 1,360 | C |
| December..... | 17-0 | ..... | 11-7 | 0-56 | 0-65 | 719 | C |

SLOCAN RIVER NEAR CRESCENT VALLEY (3017).

Location.—In Slocan Junction precinct, Nelson Water district, about 1 mile from the mouth on the highway bridge near Crescent Valley.

Records Available.—1913 and 1914.

Climatic Conditions.—Similar to Nelson. (See Kootenay river, near Nelson.)

Gauge.—Vertical staff gauge fastened to the bridge cribbing and read daily by Mr. Paul Peterson of Crescent Valley.

Channel.—Straight above and below the section and inclined to shift. One side of the channel is generally filled with logs during the summer. The control is not satisfactory.

Discharge Measurements.—Seven measurements were made in 1913 and five in 1914.

Accuracy.—The results during medium and low stages should be within 10 per cent or 15 per cent, but the high water results cannot be guaranteed.

General.—By subtracting the discharge of Slocan river from the discharge of Kootenay river near Glade, the discharge of Kootenay river at Bonnington pool and Bonnington falls is obtained. By subtracting 1 per cent of the discharges at Bonnington pool or Bonnington falls the discharge of Kootenay river near Nelson is obtained.

DISCHARGE MEASUREMENTS of Slocan River, near Crescent Valley, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity | Gauge Height. | Discharge. |
|--------------|------------------------|-----------|--------|------------------|---------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Nov. 8..... | C. E. W., C. E. R..... | 1048 | 237 | 652 | 2.47 | 4.4 | 1,600 |
| 1914. | | | | | | | |
| Mar. 6..... | C. E. R., A. J. V..... | 1672 | 210 | 470 | 1.91 | 3.45 | 897 |
| May. 30..... | J. A. E..... | 1909 | 219 | 1,470 | 5.43 | 8.10 | 7,980 |
| Aug. 13..... | C. E. R., G. K. B..... | 1928 | 224 | 845 | 3.01 | 5.1 | 2,540 |
| Nov. 10..... | J. A. E..... | 1909 | 132 | 579 | 4.11 | 4.82 | 2,380 |
| Dec. 9..... | J. A. E., G. K. B..... | 1929 | 128 | 468 | 2.62 | 3.95 | 1,230 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Slocan River near Crescent Valley,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 3.4 | 850 | 3.8 | 1,100 | 3.6 | 970 | 4.1 | 1,340 | 6.4 | 3,980 | 9.05 | 7,290 |
| 2..... | 3.5 | 900 | 3.8 | 1,100 | 3.6 | 970 | 4.1 | 1,340 | 7.2 | 4,950 | 9.40 | 7,770 |
| 3..... | 3.5 | 900 | 4.0 | 1,240 | 3.6 | 970 | 4.1 | 1,340 | 7.7 | 5,370 | 11.40 | 10,830 |
| 4..... | 3.6 | 970 | 3.9 | 1,170 | 3.5 | 900 | 4.1 | 1,340 | 7.6 | 5,450 | 11.85 | 11,700 |
| 5..... | 3.7 | 1,040 | 3.8 | 1,100 | 3.5 | 900 | 4.2 | 1,440 | 7.3 | 5,070 | 11.00 | 10,100 |
| 6..... | 4.0 | 1,240 | 3.9 | 1,170 | 3.5 | 900 | 4.3 | 1,550 | 7.05 | 4,760 | 10.20 | 8,900 |
| 7..... | 4.8 | 2,090 | 3.9 | 1,170 | 3.5 | 900 | 5.1 | 2,440 | 7.0 | 4,700 | 10.00 | 8,600 |
| 8..... | 4.7 | 1,980 | 3.9 | 1,170 | 3.2 | 750 | 5.2 | 2,550 | 7.2 | 4,950 | 9.7 | 8,190 |
| 9..... | 4.5 | 1,750 | 3.9 | 1,170 | 3.2 | 750 | 5.2 | 2,550 | 7.6 | 5,450 | 9.25 | 7,570 |
| 10..... | 4.4 | 1,650 | 3.9 | 1,170 | 3.2 | 750 | 5.3 | 2,670 | 8.1 | 6,080 | 9.40 | 7,770 |
| 11..... | 4.3 | 1,550 | 3.8 | 1,100 | 3.2 | 750 | 5.3 | 2,570 | 7.75 | 5,630 | 9.15 | 7,430 |
| 12..... | 4.2 | 1,440 | 3.7 | 1,040 | 3.3 | 800 | 5.4 | 2,780 | 7.8 | 5,670 | 9.10 | 7,500 |
| 13..... | 4.1 | 1,340 | 3.6 | 970 | 3.3 | 800 | 6.0 | 3,500 | 8.1 | 6,080 | 9.25 | 7,570 |
| 14..... | 4.1 | 1,340 | 3.6 | 970 | 3.3 | 800 | 6.2 | 3,740 | 8.3 | 6,330 | 9.65 | 8,120 |
| 15..... | 4.1 | 1,340 | 3.6 | 970 | 3.3 | 800 | 6.70 | 4,340 | 8.65 | 6,770 | 10.00 | 8,600 |
| 16..... | 4.0 | 1,240 | 3.6 | 970 | 3.4 | 850 | 7.2 | 4,950 | 9.3 | 7,630 | 10.35 | 9,110 |
| 17..... | 4.0 | 1,240 | 3.7 | 1,040 | 3.4 | 850 | 7.05 | 4,760 | 9.3 | 7,630 | 10.7 | 9,640 |
| 18..... | 4.0 | 1,240 | 3.6 | 970 | 4.0 | 1,240 | 6.70 | 4,340 | 9.1 | 7,360 | 10.55 | 9,410 |
| 19..... | 4.0 | 1,240 | 3.6 | 970 | 4.0 | 1,240 | 7.1 | 4,820 | 9.1 | 7,360 | 10.5 | 9,340 |
| 20..... | 4.0 | 1,240 | 3.6 | 970 | 4.0 | 1,240 | 7.2 | 4,950 | 9.0 | 7,220 | 10.0 | 8,600 |
| 21..... | 4.0 | 1,240 | 3.6 | 970 | 4.0 | 1,240 | 7.0 | 4,700 | 9.0 | 7,220 | 9.7 | 8,190 |
| 22..... | 4.0 | 1,240 | 3.6 | 970 | 4.0 | 1,240 | 6.4 | 3,980 | 9.1 | 7,360 | 9.25 | 7,560 |
| 23..... | 3.9 | 1,170 | 3.7 | 1,040 | 4.0 | 1,240 | 6.3 | 3,860 | 9.1 | 7,360 | 9.0 | 7,220 |
| 24..... | 3.7 | 1,040 | 3.6 | 970 | 4.1 | 1,340 | 6.3 | 3,860 | 9.2 | 7,500 | 8.7 | 6,840 |
| 25..... | 3.8 | 1,100 | 3.6 | 970 | 4.1 | 1,340 | 6.3 | 3,860 | 9.65 | 8,120 | 8.35 | 6,390 |
| 26..... | 3.9 | 1,170 | 3.6 | 970 | 4.0 | 1,240 | 6.3 | 3,860 | 9.2 | 7,500 | 8.75 | 6,900 |
| 27..... | 3.9 | 1,170 | 3.6 | 970 | 4.0 | 1,240 | 6.3 | 3,860 | 9.1 | 7,360 | 8.75 | 6,900 |
| 28..... | 3.8 | 1,170 | 3.6 | 970 | 4.0 | 1,240 | 6.2 | 3,760 | 8.75 | 6,900 | 8.75 | 6,900 |
| 29..... | 3.6 | 970 | ..... | ..... | 4.1 | 1,340 | 6.1 | 3,620 | 8.2 | 6,200 | 8.8 | 6,960 |
| 30..... | 3.7 | 1,040 | ..... | ..... | 4.1 | 1,340 | 6.2 | 3,740 | 8.2 | 6,200 | 9.1 | 7,360 |
| 31..... | 3.8 | 1,100 | ..... | ..... | 4.1 | 1,340 | ..... | ..... | 8.6 | 6,710 | ..... | ..... |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Slocan River near Crescent Valley, for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|-----------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Fis. discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 9-15 | 7,420 | 5-4 | 2,780 | 4-1 | 1,340 | 4-4 | 1,650 | 5-0 | 2,320 | 4-2 | 1,440 |
| 2 | 9-20 | 7,500 | 5-4 | 2,780 | 4-1 | 1,340 | 4-4 | 1,650 | 5-2 | 2,550 | 4-2 | 1,440 |
| 3 | 9-55 | 7,980 | 5-4 | 2,780 | 4-0 | 1,240 | 4-4 | 1,650 | 5-1 | 2,440 | 4-2 | 1,440 |
| 4 | 9-65 | 8,120 | 5-3 | 2,670 | 4-0 | 1,240 | 4-4 | 1,650 | 5-1 | 2,440 | 4-1 | 1,340 |
| 5 | 9-65 | 8,120 | 5-3 | 2,670 | 4-0 | 1,240 | 4-3 | 1,550 | 5-1 | 2,440 | 4-1 | 1,340 |
| 6 | 9-65 | 8,120 | 5-3 | 2,670 | 4-0 | 1,240 | 4-3 | 1,550 | 5-1 | 2,440 | 4-1 | 1,340 |
| 7 | 9-65 | 8,120 | 5-2 | 2,550 | 4-0 | 1,240 | 4-3 | 1,550 | 5-1 | 2,440 | 4-0 | 1,240 |
| 8 | 9-6 | 8,050 | 5-4 | 2,780 | 4-0 | 1,240 | 4-2 | 1,440 | 5-0 | 2,320 | 4-0 | 1,240 |
| 9 | 9-3 | 7,630 | 5-3 | 2,670 | 4-0 | 1,240 | 4-2 | 1,440 | 5-0 | 2,320 | 4-0 | 1,240 |
| 10 | 9-3 | 7,630 | 5-3 | 2,670 | 4-0 | 1,240 | 4-2 | 1,440 | 5-0 | 2,320 | 4-0 | 1,240 |
| 11 | 9-3 | 7,630 | 5-2 | 2,550 | 4-0 | 1,240 | 4-2 | 1,440 | 4-4 | 1,650 | 4-0 | 1,240 |
| 12 | 9-3 | 7,630 | 5-2 | 2,550 | 4-0 | 1,240 | 4-2 | 1,440 | 4-4 | 1,650 | 4-0 | 1,240 |
| 13 | 9-3 | 7,630 | 5-2 | 2,550 | 4-0 | 1,240 | 4-2 | 1,440 | 5-0 | 2,320 | 3-4 | 850 |
| 14 | 9-2 | 7,500 | 5-1 | 2,440 | 4-0 | 1,240 | 4-2 | 1,440 | 4-4 | 1,650 | 3-4 | 850 |
| 15 | 9-2 | 7,500 | 5-0 | 2,320 | 4-0 | 1,240 | 4-2 | 1,440 | 4-4 | 1,650 | 3-3 | 800 |
| 16 | 8-7 | 6,840 | 4-4 | 1,650 | 4-0 | 1,240 | 4-2 | 1,440 | 4-4 | 1,650 | 3-3 | 800 |
| 17 | 8-25 | 6,260 | 4-4 | 1,650 | 4-0 | 1,240 | 4-2 | 1,440 | 4-3 | 1,550 | 3-3 | 800 |
| 18 | 8-15 | 6,140 | 4-4 | 1,650 | 4-1 | 1,340 | 4-3 | 1,550 | 4-3 | 1,550 | 3-2 | 750 |
| 19 | 8-05 | 6,010 | 4-4 | 1,650 | 4-25 | 1,490 | 4-4 | 1,650 | 4-3 | 1,550 | 3-2 | 750 |
| 20 | 7-35 | 5,130 | 4-3 | 1,550 | 4-3 | 1,550 | 5-0 | 2,320 | 4-3 | 1,550 | 3-2 | 750 |
| 21 | 7-15 | 4,880 | 4-3 | 1,550 | 4-3 | 1,550 | 5-0 | 2,320 | 4-3 | 1,550 | 3-2 | 750 |
| 22 | 7-05 | 4,700 | 4-3 | 1,550 | 4-3 | 1,550 | 4-4 | 1,650 | 4-2 | 1,440 | 3-2 | 750 |
| 23 | 6-7 | 4,240 | 4-3 | 1,550 | 4-3 | 1,550 | 4-4 | 1,650 | 4-2 | 1,440 | 3-2 | 750 |
| 24 | 6-7 | 4,240 | 4-2 | 1,440 | 4-3 | 1,550 | 4-3 | 1,550 | 4-2 | 1,440 | 3-2 | 750 |
| 25 | 6-3 | 3,860 | 4-2 | 1,440 | 4-3 | 1,550 | 4-3 | 1,550 | 4-2 | 1,440 | 3-2 | 750 |
| 26 | 6-2 | 3,740 | 4-2 | 1,440 | 4-3 | 1,550 | 4-3 | 1,550 | 4-2 | 1,440 | 3-3 | 800 |
| 27 | 6-1 | 3,620 | 4-2 | 1,440 | 4-4 | 1,650 | 4-3 | 1,550 | 4-2 | 1,440 | 3-3 | 800 |
| 28 | 6-0 | 3,500 | 4-2 | 1,440 | 4-4 | 1,650 | 4-3 | 1,550 | 4-2 | 1,440 | 3-3 | 800 |
| 29 | 6-05 | 3,500 | 4-2 | 1,440 | 4-4 | 1,650 | 4-3 | 1,550 | 4-2 | 1,440 | 3-3 | 800 |
| 30 | 6-1 | 3,620 | 4-1 | 1,340 | 4-4 | 1,650 | 4-4 | 1,650 | 4-2 | 1,440 | 3-3 | 800 |
| 31 | 5-75 | 3,500 | 4-1 | 1,340 | ..... | ..... | 4-4 | 1,650 | ..... | ..... | 3-3 | 800 |

MONTHLY DISCHARGE of Slocan River near Crescent Valley, for 1914.

(Drainage area, 1,300 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| January | 2,090 | 850 | 1,260 | 0-97 | 1-12 | 77,500 | C |
| February | 1,240 | 970 | 1,050 | 0-81 | 0-84 | 58,300 | C |
| March | 1,340 | 750 | 1,040 | 0-80 | 0-92 | 64,000 | C |
| April | 4,950 | 1,340 | 3,280 | 2-52 | 2-81 | 195,000 | D |
| May | 8,120 | 3,980 | 6,360 | 4-89 | 5-64 | 391,000 | ..... |
| June | 11,700 | 3,390 | 8,170 | 6-29 | 7-02 | 486,000 | ..... |
| July | 8,120 | 3,500 | 6,150 | 4-73 | 5-45 | 378,000 | ..... |
| August | 2,780 | 1,340 | 2,050 | 1-58 | 1-82 | 126,000 | C |
| September | 1,650 | 1,240 | 1,390 | 1-07 | 1-19 | 82,700 | B |
| October | 2,320 | 1,440 | 1,560 | 1-22 | 1-41 | 97,800 | B |
| November | 2,550 | 1,440 | 1,840 | 1-42 | 1-58 | 109,000 | B |
| December | 1,440 | 750 | 989 | 0-76 | 0-88 | 60,800 | C |

SESSIONAL PAPER No. 25e

AKOLKOLEX RIVER NEAR WIGWAM (3000).

Location.—Section 35, township 21, range 1, west 6th, about 1 mile from Wigwam, where the wagon road crosses the river just above the falls. Revelstoke District.

Records Available.—From May 1, 1913, to December 31, 1914.

Climatic Conditions.—Summers hot and moderately dry. Heavy snowfall during winters. Thermometer rarely goes below zero. Stream at section seldom freezes except for a day or two. Anchor ice seldom forms for more than one or two days at a time.

Gauge.—Chain gauge is used, referred to three bench-marks. From May to October inclusive, gauge readings are taken three times a week; during the rest of the year once a week, by J. A. Lewis, Wigwam.

Channel.—Straight for one hundred yards above and below section. Water is swift, and flows through a rock box canyon, for 150 yards above and below the section. The control is rock and appears very permanent.

Discharge Measurements.—Measurements are made from the upstream side of the wagon bridge. It is difficult to obtain accurate soundings in high water. In 1913 ten well-distributed measurements were made, and in 1914 seven measurements were made.

Accuracy.—Apparently accurate measurements were made, but due to the infrequency of readings, the mean monthly discharge cannot be guaranteed to within 10 per cent or 15 per cent. December gauge readings were at times affected by ice. Discharges below height 2.0 cannot be guaranteed.

DISCHARGE MEASUREMENTS of Akolkolex River near Wigwam, B.C., 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-----------|---------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft |
| Mar. 18. | C. E. Webb. | 1,048 | 30 | 121 | 1.48 | 1.35 | 179 |
| May 19 | J. A. Elliott. | 1,672 | 36 | 275 | 4.95 | 5.30 | 1,360 |
| June 26.. | " | 1,909 | 37 | 312 | 5.34 | 6.10 | 1,670 |
| July 24 | " | 1,909 | 35 | 239 | 3.88 | 4.30 | 929 |
| Aug. 10 | " | 1,909 | 37 | 190 | 2.82 | 3.10 | 537 |
| Sept. 6 | J. A. E., & C. E. R | 1,927 | 40 | 171 | 2.18 | 2.40 | 373 |
| Oct. 10.. | " | 1,909 | 37 | 150 | 2.18 | 2.20 | 329 |

DAILY GAUGE HEIGHT AND DISCHARGE of Akolkolex River near Wigwam, B.C.,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-3 | 177 | 1-3 | 177 | 1-1 | 150 | 1-24 | 168 | 4-45 | 1,020 | 7-25 | 2,405 |
| 2 | 1-3 | 177 | 1-3 | 177 | 1-13 | 154 | 1-25 | 169 | 5-1 | 1,300 | 8-2 | 2,950 |
| 3 | 1-4 | 193 | 1-3 | 177 | 1-13 | 154 | 1-27 | 172 | 4-9 | 1,210 | 7-6 | 2,600 |
| 4 | 1-4 | 193 | 1-25 | 169 | 1-13 | 154 | 1-29 | 175 | 4-7 | 1,130 | 7-0 | 2,270 |
| 5 | 1-5 | 210 | 1-25 | 169 | 1-13 | 154 | 1-3 | 177 | 4-4 | 1,000 | 6-4 | 1,940 |
| 6 | 1-5 | 210 | 1-25 | 169 | 1-13 | 154 | 1-61 | 228 | 4-4 | 1,000 | 6-1 | 1,790 |
| 7 | 1-6 | 226 | 1-25 | 169 | 1-13 | 154 | 1-92 | 277 | 4-5 | 1,040 | 5-8 | 1,640 |
| 8 | 1-6 | 226 | 1-25 | 169 | 1-13 | 154 | 2-24 | 338 | 4-6 | 1,080 | 5-5 | 1,490 |
| 9 | 1-6 | 226 | 1-25 | 169 | 1-13 | 154 | 2-33 | 336 | 4-7 | 1,130 | 5-1 | 1,300 |
| 10 | 1-5 | 210 | 1-2 | 162 | 1-13 | 154 | 2-44 | 378 | 4-9 | 1,210 | 5-35 | 1,415 |
| 11 | 1-5 | 210 | 1-2 | 162 | 1-13 | 154 | 2-57 | 405 | 5-2 | 1,350 | 5-6 | 1,540 |
| 12 | 1-5 | 210 | 1-2 | 162 | 1-13 | 154 | 2-78 | 455 | 5-4 | 1,440 | 5-9 | 1,690 |
| 13 | 1-4 | 193 | 1-2 | 162 | 1-13 | 154 | 2-99 | 509 | 5-61 | 1,545 | 6-2 | 1,840 |
| 14 | 1-4 | 193 | 1-2 | 162 | 1-3 | 177 | 3-2 | 370 | 5-82 | 1,650 | 6-7 | 2,100 |
| 15 | 1-4 | 193 | 1-2 | 162 | 1-3 | 177 | 3-27 | 591 | 6-03 | 1,755 | 7-1 | 2,320 |
| 16 | 1-4 | 193 | 1-15 | 156 | 1-4 | 193 | 3-34 | 613 | 6-23 | 1,855 | 7-6 | 2,600 |
| 17 | 1-4 | 193 | 1-15 | 156 | 1-5 | 210 | 3-4 | 632 | 5-92 | 1,700 | 7-85 | 2,750 |
| 18 | 1-3 | 177 | 1-15 | 156 | 1-5 | 210 | 3-38 | 625 | 5-61 | 1,545 | 8-1 | 2,890 |
| 19 | 1-3 | 177 | 1-13 | 154 | 1-5 | 210 | 3-36 | 619 | 5-3 | 1,390 | 7-4 | 2,490 |
| 20 | 1-3 | 177 | 1-13 | 154 | 1-5 | 210 | 3-34 | 613 | 5-6 | 1,540 | 6-7 | 2,100 |
| 21 | 1-3 | 177 | 1-13 | 154 | 1-5 | 210 | 3-3 | 600 | 5-9 | 1,690 | 6-1 | 1,790 |
| 22 | 1-3 | 177 | 1-13 | 154 | 1-5 | 210 | 3-3 | 600 | 6-2 | 1,840 | 5-7 | 1,590 |
| 23 | 1-3 | 177 | 1-13 | 154 | 1-5 | 210 | 3-3 | 600 | 6-4 | 1,940 | 5-3 | 1,390 |
| 24 | 1-3 | 177 | 1-12 | 152 | 1-5 | 210 | 3-3 | 600 | 6-2 | 1,840 | 4-89 | 1,206 |
| 25 | 1-3 | 177 | 1-12 | 152 | 1-5 | 210 | 3-31 | 603 | 6-0 | 1,740 | 5-49 | 1,485 |
| 26 | 1-3 | 177 | 1-12 | 152 | 1-4 | 193 | 3-32 | 606 | 5-8 | 1,640 | 6-1 | 1,790 |
| 27 | 1-3 | 177 | 1-1 | 150 | 1-4 | 193 | 3-34 | 613 | 5-3 | 1,390 | 6-15 | 1,815 |
| 28 | 1-3 | 177 | 1-1 | 150 | 1-3 | 177 | 3-49 | 662 | 4-8 | 1,170 | 6-2 | 1,840 |
| 29 | 1-3 | 177 | ..... | ..... | 1-3 | 177 | 3-64 | 714 | 4-4 | 1,000 | 6-5 | 2,000 |
| 30 | 1-3 | 177 | ..... | ..... | 1-3 | 177 | 3-8 | 770 | 5-35 | 1,415 | 6-8 | 2,150 |
| 31 | 1-3 | 177 | ..... | ..... | 1-3 | 177 | ..... | ..... | 6-3 | 1,890 | ..... | ..... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Akolkolex River near Wigwam, B.C.,
for 1914.—*Concluded.*

| DAY. | July. | | August | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 7-0 | 2,270 | 5-03 | 1,265 | 2-35 | 360 | 2-9 | 485 | 3-1 | 540 | 2-0 | 290 |
| 2 | 7-45 | 2,520 | 5-01 | 1,255 | 2-4 | 370 | 2-85 | 472 | 3-1 | 540 | 1-95 | 282 |
| 3 | 7-9 | 2,780 | 5-0 | 1,250 | 2-75 | 447 | 2-8 | 460 | 3-0 | 512 | 1-9 | 274 |
| 4 | 7-85 | 2,750 | 4-75 | 1,150 | 3-1 | 540 | 2-68 | 430 | 3-0 | 512 | 1-85 | 266 |
| 5 | 7-8 | 2,720 | 4-5 | 1,040 | 2-75 | 447 | 2-56 | 403 | 2-9 | 485 | 1-8 | 258 |
| 6 | 7-5 | 2,550 | 3-6 | 700 | 2-4 | 370 | 2-45 | 380 | 2-8 | 460 | 1-75 | 250 |
| 7 | 7-2 | 2,380 | 3-5 | 665 | 2-59 | 410 | 2-39 | 368 | 2-6 | 412 | 1-6 | 226 |
| 8 | 6-89 | 2,204 | 3-4 | 632 | 2-78 | 455 | 2-33 | 356 | 2-6 | 412 | 1-5 | 210 |
| 9 | 7-17 | 2,362 | 3-3 | 600 | 2-78 | 455 | 2-27 | 344 | 2-55 | 401 | 1-4 | 193 |
| 10 | 7-45 | 2,520 | 3-1 | 540 | 2-8 | 460 | 2-2 | 330 | 2-55 | 401 | 1-2 | 162 |
| 11 | 7-37 | 2,472 | 3-55 | 682 | 2-8 | 460 | 2-17 | 324 | 2-5 | 390 | 1-2 | 162 |
| 12 | 7-3 | 2,430 | 4-0 | 845 | 2-6 | 412 | 2-14 | 318 | 2-45 | 380 | 1-1 | 150 |
| 13 | 7-05 | 2,295 | 4-1 | 885 | 2-4 | 370 | 2-1 | 310 | 2-4 | 370 | 1-1 | 150 |
| 14 | 6-8 | 2,150 | 4-2 | 925 | 2-1 | 310 | 2-3 | 350 | 2-3 | 350 | 1-2 | 162 |
| 15 | 6-56 | 2,030 | 3-9 | 805 | 2-0 | 290 | 2-5 | 390 | 2-2 | 330 | 1-3 | 177 |
| 16 | 6-03 | 1,755 | 3-6 | 700 | 1-9 | 274 | 2-7 | 435 | 2-1 | 310 | | 150 |
| 17 | 5-5 | 1,490 | 3-3 | 600 | 2-28 | 346 | 2-9 | 485 | 2-0 | 290 | | 150 |
| 18 | 5-55 | 1,515 | 3-3 | 600 | 2-67 | 428 | 2-8 | 460 | 2-0 | 290 | | 150 |
| 19 | 5-6 | 1,540 | 3-3 | 600 | 2-58 | 407 | 2-7 | 435 | 2-0 | 290 | | 150 |
| 20 | 5-33 | 1,405 | 3-6 | 700 | 2-49 | 388 | 2-6 | 412 | 2-0 | 290 | | 150 |
| 21 | 5-06 | 1,280 | 3-9 | 805 | 2-4 | 370 | 2-51 | 392 | 2-0 | 290 | | 150 |
| 22 | 4-78 | 1,162 | 3-6 | 700 | 2-45 | 380 | 2-42 | 374 | 2-0 | 290 | | 150 |
| 23 | 4-54 | 1,056 | 3-3 | 600 | 2-5 | 390 | 2-33 | 356 | 2-0 | 290 | | 150 |
| 24 | 4-3 | 963 | 2-9 | 485 | 2-6 | 412 | 2-25 | 340 | 1-95 | 282 | | 150 |
| 25 | 4-3 | 963 | 3-0 | 512 | 2-7 | 435 | 2-2 | 330 | 1-95 | 282 | | 150 |
| 26 | 4-2 | 925 | 3-1 | 540 | 2-8 | 460 | 2-17 | 324 | 2-0 | 290 | | 150 |
| 27 | 4-2 | 925 | 3-44 | 645 | 2-95 | 498 | 2-14 | 318 | 2-05 | 300 | | 150 |
| 28 | 4-16 | 909 | 3-78 | 763 | 3-1 | 540 | 2-1 | 310 | 2-1 | 310 | | 150 |
| 29 | 4-12 | 893 | 3-29 | 597 | 2-8 | 460 | 2-3 | 350 | 2-05 | 300 | | 150 |
| 30 | 4-58 | 1,072 | 2-8 | 460 | 2-95 | 498 | 2-5 | 390 | 2-0 | 290 | | 150 |
| 31 | 5-05 | 1,275 | 2-3 | 350 | | | 2-8 | 460 | | | | 150 |

MONTHLY DISCHARGE of Akolkolex River near Wigwam, B.C., for 1914.

(Drainage area, 105 square miles.)

| Month. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|--------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet | |
| January | 226 | 177 | 191 | 1-81 | 2-07 | 11,700 | D |
| February | 177 | 150 | 161 | 1-53 | 1-59 | 8,940 | D |
| March | 240 | 150 | 178 | 1-70 | 1-96 | 10,900 | D |
| April | 770 | 108 | 481 | 4-58 | 5-11 | 28,600 | C |
| May | 1,890 | 1,000 | 1,330 | 13-6 | 15-7 | 87,900 | C |
| June | 2,950 | 1,300 | 1,970 | 18-8 | 21-0 | 117,000 | |
| July | 2,780 | 833 | 1,790 | 17-0 | 19-0 | 110,000 | C |
| August | 1,260 | 350 | 730 | 7-04 | 8-12 | 45,400 | B |
| September | 540 | 271 | 415 | 3-95 | 4-11 | 24,700 | B |
| October | 485 | 310 | 384 | 3-66 | 4-22 | 23,600 | B |
| November | 540 | 282 | 363 | 3-46 | 3-86 | 21,600 | B |
| December | 290 | 150 | 181 | 1-72 | 1-98 | 11,100 | |

BEAVER RIVER NEAR SIX-MILE CREEK (3001).

Location.—Township 29, range 25, west 5th, mer. 4 miles from mouth, about 150 yards from the railway station at Six-mile creek, on downstream side of the lumber company's bridge. Revelstoke district.

Records Available.—May 24 to November 1, 1913; April 1 to December 31, 1914.

Climatic Conditions.—Summers hot and fairly dry. Winters severe (30°F.) with heavy snowfall. Ice conditions exist generally from the end of November till the end of March. Frazil ice is to be contended with.

Gauge.—Chain gauge used is referred to three bench-marks. Mr. Wm. McCreary reads the gauge daily at 5 p.m., at which time during the summer freshet, the river is considered to be at a mean height for the day.

Channel.—Straight for 100 yards above and below the section. The river is very swift during high water, and accurate soundings can only be made at low water. During the freshet in June, July, and August, water flows through two or three small side channels. The control is not very permanent.

Discharge Measurements.—Measurements are made from the downstream side of the bridge. In 1913 ten discharge measurements were made, one of which was made under ice conditions on December 3, giving a discharge of 330 c.f.s.

Accuracy.—The gauge-height-discharge curve shows a fairly close accuracy, though the section does not appear to be good. The fact that during the summer the river varies greatly on a warm day depreciates the accuracy of the gauge reading. The 1914 data are guaranteed to be within 20 per cent only, with the exception of December, which are not guaranteed at all.

DISCHARGE MEASUREMENTS of Beaver River at Six-Mile Creek, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 22..... | J. A. E..... | 1,909 | 140 | 390 | 6.30 | 3.21 | 2,440 |
| " 10..... | "..... | 1,909 | 140 | 489.7 | 5.87 | 3.35 | 2,870 |
| Sept. 8..... | "..... | 1,927 | 140 | 373 | 5.62 | 2.70 | 2,100 |
| Oct 24..... | "..... | 1,909 | 51 | 157 | 4.26 | 1.0 | 670 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Beaver River near Six-mile, Creek,
for 1914.

| DAY. | April. | | May. | | June. | |
|---------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet | Sec.-ft. |
| 1..... | | 900 | 2.6 | 1,940 | 3.55 | 3,240 |
| 2..... | | 900 | 3.3 | 2,840 | 4.60 | 5,380 |
| 3..... | | 900 | 3.3 | 2,840 | 5.1 | 6,710 |
| 4..... | | 900 | 2.85 | 2,220 | 4.5 | 5,140 |
| 5..... | | 900 | 2.6 | 1,940 | 4.1 | 4,260 |
| 6..... | | 900 | 2.5 | 1,840 | 3.9 | 3,860 |
| 7..... | | 900 | 2.45 | 1,790 | 3.6 | 3,330 |
| 8..... | | 900 | 2.6 | 1,940 | 3.3 | 2,840 |
| 9..... | | 900 | 2.8 | 2,160 | 3.3 | 2,840 |
| 10..... | | 900 | 2.8 | 2,160 | 3.4 | 2,990 |
| 11..... | | 900 | 2.9 | 2,290 | 3.7 | 3,500 |
| 12..... | | 900 | 2.9 | 2,290 | 4.0 | 4,050 |
| 13..... | | 900 | 3.2 | 2,700 | 4.2 | 4,460 |
| 14..... | | 900 | 3.35 | 2,910 | 4.6 | 5,380 |
| 15..... | | 900 | 3.4 | 2,990 | 5.0 | 6,430 |
| 16..... | | 900 | 3.5 | 3,160 | 5.1 | 6,710 |
| 17..... | | 900 | 3.4 | 2,990 | 5.2 | 6,980 |
| 18..... | | 920 | 3.2 | 2,700 | 4.7 | 5,640 |
| 19..... | | 1,130 | 3.1 | 2,560 | 4.6 | 5,380 |
| 20..... | | 1,130 | 3.3 | 2,840 | 4.5 | 5,140 |
| 21..... | 1.6 | 1,060 | 3.1 | 2,560 | 3.6 | 3,500 |
| 22..... | 1.5 | 985 | 3.4 | 2,990 | 3.5 | 3,160 |
| 23..... | 1.5 | 985 | 3.65 | 3,410 | 3.2 | 2,700 |
| 24..... | 1.7 | 1,130 | 3.7 | 3,500 | 3.2 | 2,700 |
| 25..... | 1.6 | 1,060 | 3.2 | 2,700 | 3.7 | 3,500 |
| 26..... | 1.6 | 1,060 | 3.1 | 2,560 | 3.8 | 3,680 |
| 27..... | 1.75 | 1,165 | 2.9 | 2,290 | 4.0 | 4,050 |
| 28..... | 1.8 | 1,200 | 2.8 | 2,160 | 3.9 | 3,860 |
| 29..... | 1.8 | 1,200 | 2.7 | 2,040 | 4.2 | 4,460 |
| 30..... | 2.1 | 1,460 | 2.9 | 2,290 | 4.8 | 5,880 |
| 31..... | | | 3.0 | 2,420 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Beaver River near Six-mile Creek,
for 1914—Concluded.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 5-1 | 6,710 | 4-5 | 5,140 | 2-90 | 2,290 | 2-0 | 1,370 | 1-1 | 735 | 0-9 | 615 |
| 2..... | 5-2 | 6,980 | 5-1 | 6,710 | 2-80 | 2,160 | 1-8 | 1,200 | 1-2 | 785 | 0-9 | 615 |
| 3..... | 5-5 | 7,860 | 4-9 | 6,160 | 3-30 | 2,840 | 1-6 | 1,060 | 1-1 | 735 | 0-9 | 615 |
| 4..... | 5-3 | 7,280 | 4-4 | 4,920 | 3-00 | 2,420 | 1-5 | 985 | 1-1 | 735 | 0-8 | 550 |
| 5..... | 5-2 | 6,980 | 4-1 | 4,260 | 3-10 | 2,560 | 1-2 | 785 | 1-0 | 670 | 0-8 | 550 |
| 6..... | 5-1 | 6,710 | 4-0 | 4,050 | 3-00 | 2,420 | 1-3 | 860 | 1-0 | 670 | 0-8 | 550 |
| 7..... | 4-9 | 6,160 | 3-6 | 3,330 | 2-90 | 2,290 | 1-2 | 785 | 1-1 | 735 | 0-8 | 550 |
| 8..... | 4-8 | 5,880 | 3-3 | 2,840 | 2-90 | 2,290 | 1-25 | 823 | 1-0 | 670 | 0-9 | 615 |
| 9..... | 4-8 | 5,880 | 3-8 | 3,680 | 2-20 | 1,550 | 1-3 | 860 | 1-1 | 735 | 0-9 | 615 |
| 10..... | 5-0 | 6,430 | 3-4 | 2,990 | 2-30 | 1,640 | 1-2 | 785 | 1-2 | 785 | 0-9 | 615 |
| 11..... | 5-2 | 6,980 | 3-3 | 2,840 | 2-70 | 1,740 | 1-3 | 860 | 1-1 | 735 | 0-9 | 615 |
| 12..... | 5-3 | 7,280 | 3-4 | 2,990 | 2-20 | 1,550 | 1-2 | 785 | 1-2 | 785 | 0-9 | 615 |
| 13..... | 5-4 | 7,560 | 3-5 | 3,160 | 2-40 | 1,740 | 1-1 | 735 | 1-1 | 735 | 1-0 | 670 |
| 14..... | 5-2 | 6,980 | 3-3 | 2,840 | 2-30 | 1,640 | 1-2 | 785 | 1-1 | 735 | 1-1 | 735 |
| 15..... | 4-8 | 5,880 | 3-4 | 2,990 | 2-20 | 1,550 | 1-2 | 785 | 1-1 | 735 | 0-9 | 615 |
| 16..... | 3-9 | 3,860 | 3-7 | 3,500 | 2-00 | 1,370 | 1-4 | 920 | 1-0 | 670 | 0-9 | 615 |
| 17..... | 4-5 | 5,140 | 3-7 | 3,500 | 2-10 | 1,460 | 1-5 | 985 | 1-1 | 735 | 0-9 | 615 |
| 18..... | 5-0 | 6,430 | 3-9 | 3,860 | 2-20 | 1,550 | 1-3 | 860 | 1-1 | 735 | 0-8 | 550 |
| 19..... | 5-3 | 7,280 | 3-8 | 3,680 | 2-20 | 1,550 | 1-0 | 670 | 1-0 | 670 | 0-8 | 550 |
| 20..... | 4-7 | 5,640 | 4-0 | 4,050 | 2-40 | 1,740 | 1-1 | 735 | 1-1 | 735 | 0-8 | 550 |
| 21..... | 3-7 | 3,500 | 3-6 | 3,330 | 2-10 | 1,460 | 1-0 | 670 | 1-1 | 735 | 0-8 | 550 |
| 22..... | 3-5 | 3,160 | 3-7 | 3,500 | 1-90 | 1,280 | 1-1 | 735 | 1-1 | 735 | 0-8 | 550 |
| 23..... | 3-7 | 3,500 | 3-8 | 3,680 | 1-70 | 1,136 | 1-1 | 735 | 1-1 | 735 | 1-1 | 735 |
| 24..... | 3-8 | 3,680 | 3-5 | 3,160 | 1-60 | 1,060 | 1-0 | 670 | 1-1 | 735 | 1-4 | 920 |
| 25..... | 3-6 | 3,330 | 3-6 | 3,330 | 1-80 | 1,200 | 1-0 | 670 | 1-0 | 670 | 0-9 | 615 |
| 26..... | 3-7 | 3,500 | 3-4 | 2,990 | 2-30 | 1,640 | 0-95 | 643 | 1-0 | 670 | 0-8 | 550 |
| 27..... | 3-5 | 3,160 | 3-3 | 2,840 | 2-40 | 1,740 | 1-0 | 670 | 1-0 | 670 | 0-8 | 550 |
| 28..... | 3-3 | 2,840 | 3-2 | 2,700 | 2-20 | 1,550 | 0-9 | 615 | 1-0 | 670 | 0-8 | 550 |
| 29..... | 3-7 | 3,500 | 3-25 | 2,700 | 2-30 | 1,640 | 1-0 | 670 | 0-9 | 615 | 0-9 | 615 |
| 30..... | 4-3 | 4,680 | 3-20 | 2,700 | 2-10 | 1,460 | 1-1 | 735 | 0-9 | 615 | 0-8 | 550 |
| 31..... | 4-0 | 4,050 | 2-80 | 2,160 | ..... | ..... | 1-0 | 670 | ..... | ..... | 0-8 | 550 |

MONTHLY DISCHARGE of Beaver River near Six-mile Creek, for 1914.

Drainage area 400 square miles.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April..... | 1,460 | ..... | 993 | 2-48 | 2-86 | 61,100 |
| May..... | 3,500 | 1,790 | 2,520 | 6-30 | 7-26 | 155,000 |
| June..... | 6,980 | 2,700 | 4,390 | 11-0 | 12-3 | 261,000 |
| July..... | 7,860 | 2,840 | 5,450 | 13-6 | 15-7 | 335,000 |
| August..... | 6,710 | 2,160 | 3,570 | 8-92 | 10-3 | 220,000 |
| September..... | 2,840 | 1,060 | 1,750 | 4-38 | 4-89 | 104,000 |
| October..... | 1,370 | 615 | 810 | 2-02 | 2-33 | 49,800 |
| November..... | 785 | 615 | 712 | 1-78 | 1-99 | 42,400 |
| December..... | 920 | 550 | 604 | 1-51 | 1-74 | 37,100 |

Accuracy "D."

SESSIONAL PAPER No. 25e

BLAEBERRY RIVER NEAR MOBERLY (3002).

Location.—SW. $\frac{1}{4}$ section 29, township 28, range 22, west 5th, 11 miles north of Golden, about one mile from mouth, on downstream side of C. P. R. bridge.

Records Available.—April 15, 1912, to November 14, 1912; June 1, 1913, to November 30, 1913; April 1, 1914, to November 30, 1914.

Climatic Conditions.—Summers hot and dry, with occasional heavy rains, causing large discharge. Winters severe (as low as -50°F), with light snowfall. Ice conditions exist generally from the middle of November to the 1st of April. Frazil ice.

Gauge.—Vertical staff gauge, used and read three times a week by Mr. R. M. Cooper, during the open season.

Channel.—Channel is straight for about 50 yards above and below the station. The water is swift and controlled by a sandbar about 100 yards downstream. This bar probably shifts. Exceedingly high water on the Columbia may affect the gauge readings.

Discharge Measurements.—Measurements are made from downstream side of the railway bridge. In 1912 eight meterings were made, one of which was made on the 21st of February under ice conditions, the discharge was 53 c.f.s. In 1913, nine meterings were made, which formed a gauge-height-discharge curve varying considerably from that of 1912. A new curve was plotted from five measurements made in 1914, due to shift of bar.

Accuracy.—Due to the infrequency of gauge readings and the apparent non-permanency of the control the results are considered only to be within 15 per cent.

DISCHARGE MEASUREMENTS of Blaeberry River near Blaeberry, C.P.R. Bridge, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------|---------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec | Feet. | Sec.-ft. |
| June 12 | J. A. E. | 1909 | 82 | 357 | 5-15 | 3-10 | 1,840 |
| July 27 | " | 1909 | 78 | 323 | 3-96 | 2-60 | 2,180 |
| Aug. 5 | " | 1909 | 78 | 322 | 4-53 | 2-80 | 1,460 |
| Sept. 10 | " | 1927 | 78 | 230 | 2-50 | 1-75 | 573 |
| Oct. 13 | " | 1909 | 66 | 188 | 2-19 | 1-3 | 412 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Blaeberry River near Golden, for 1914.

| Day. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.6 | 505 | 2.0 | 730 | 3.0 | 1,720 |
| 2 | | 550 | | 730 | | 1,980 |
| 3 | 1.8 | 600 | | 600 | | 2,440 |
| 4 | 1.4 | 425 | 1.9 | 660 | 3.8 | 2,940 |
| 5 | | 442 | | 695 | | 3,020 |
| 6 | 1.5 | 460 | 2.0 | 730 | 3.9 | 3,120 |
| 7 | | 425 | | 660 | | 2,360 |
| 8 | 1.3 | 390 | 1.8 | 600 | 3.0 | 1,720 |
| 9 | | 390 | | 642 | | 1,480 |
| 10 | | 425 | | 681 | | 1,360 |
| 11 | 1.4 | 425 | 2.0 | 730 | 2.6 | 1,260 |
| 12 | | 407 | | 765 | | 1,720 |
| 13 | 1.3 | 390 | 2.1 | 800 | 3.4 | 2,290 |
| 14 | | 390 | | 880 | | 2,680 |
| 15 | 1.3 | 390 | 2.3 | 965 | 3.9 | 3,120 |
| 16 | | 390 | | 1,040 | | 3,120 |
| 17 | | 355 | | 1,160 | | 2,940 |
| 18 | 1.2 | 355 | 2.6 | 1,260 | 3.8 | 2,940 |
| 19 | | 355 | | 1,160 | | 2,850 |
| 20 | 1.2 | 355 | 2.4 | 1,060 | 3.7 | 2,760 |
| 21 | | 355 | | 1,110 | | 2,060 |
| 22 | | 390 | 2.5 | 1,160 | 2.8 | 1,480 |
| 23 | 1.3 | 390 | | 1,100 | | 1,600 |
| 24 | | 372 | | 1,010 | 3.0 | 1,720 |
| 25 | 1.2 | 355 | 2.3 | 965 | | 1,660 |
| 26 | | 407 | | 922 | 2.9 | 1,600 |
| 27 | 1.5 | 460 | 2.2 | 880 | | 1,660 |
| 28 | 1.6 | 505 | | 922 | 3.0 | 1,720 |
| 29 | 1.7 | 550 | 2.3 | 965 | | 2,210 |
| 30 | | 630 | | 1,310 | 3.7 | 2,760 |
| 31 | | | | 1,310 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Blaeberry River near Golden for 1914—*Concluded.*

| Day. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | 2,760 | 3-4 | 2,290 | 2-4 | 1,060 | 1-8 | 600 | 0-9 | 279 | Frozen. | |
| 2. | 3-7 | 2,760 | | 2,440 | | 1,010 | | 550 | | 290 | | |
| 3. | | 2,940 | 3-6 | 2,600 | 2-3 | 965 | 1-6 | 505 | 1-0 | 300 | | |
| 4. | 3-9 | 3,120 | | 2,680 | | 922 | | 527 | | 290 | | |
| 5. | | 3,020 | 3-7 | 2,760 | 2-2 | 880 | 1-7 | 550 | 0-9 | 279 | | |
| 6. | 3-8 | 2,940 | | 2,600 | | 800 | | 600 | | 267 | | |
| 7. | | 2,760 | 3-5 | 2,440 | 2-0 | 730 | 1-9 | 660 | 0-8 | 256 | | |
| 8. | 3-6 | 2,600 | | 1,980 | | 695 | | 630 | | 267 | | |
| 9. | | 2,440 | 2-9 | 1,600 | 1-9 | 660 | 1-8 | 600 | 0-9 | 279 | | |
| 10. | 3-4 | 2,290 | | 1,540 | | 575 | | 550 | | 279 | | |
| 11. | | 2,600 | 2-8 | 1,480 | 1-6 | 505 | | 505 | 0-9 | 279 | | |
| 12. | | 2,940 | | 1,420 | | 505 | | 460 | | 279 | | |
| 13. | 4-0 | 3,290 | 2-7 | 1,360 | | 550 | 1-4 | 425 | | 256 | | |
| 14. | | 2,760 | | 1,420 | 1-7 | 550 | 1-4 | 425 | 0-7 | 236 | | |
| 15. | 3-4 | 2,290 | 2-8 | 1,480 | | 505 | | 425 | | 246 | | |
| 16. | | 2,440 | | 1,420 | 1-5 | 460 | 1-4 | 425 | 0-8 | 256 | | |
| 17. | 3-6 | 2,600 | 2-7 | 1,360 | | 488 | | 390 | | 267 | | |
| 18. | | 2,600 | | 1,260 | 1-6 | 505 | 1-2 | 355 | 0-9 | 279 | | |
| 19. | | 2,440 | 2-5 | 1,160 | | 505 | | 390 | | 290 | | |
| 20. | 3-4 | 2,290 | | 1,060 | | 505 | 1-4 | 425 | 1-0 | 300 | | |
| 21. | | 2,440 | 2-3 | 965 | 1-6 | 505 | | 425 | | 300 | | |
| 22. | 3-2 | 1,980 | | 965 | 1-0 | 482 | | 390 | | 324 | | |
| 23. | | 1,780 | | 965 | 1-5 | 460 | 1-3 | 390 | 1-1 | 324 | | |
| 24. | 2-9 | 1,600 | 2-3 | 965 | | 442 | | 355 | | 312 | | |
| 25. | | 1,480 | | 922 | 1-4 | 425 | | 324 | 1-0 | 300 | | |
| 26. | | 1,480 | 2-2 | 880 | | 460 | 0-9 | 279 | | 290 | | |
| 27. | 2-7 | 1,360 | | 880 | | 505 | | 279 | 0-9 | 279 | | |
| 28. | | 1,480 | | 965 | 1-7 | 550 | 0-9 | 279 | | 256 | | |
| 29. | 2-9 | 1,600 | 2-4 | 1,060 | | 527 | | 267 | 0-7 | 236 | | |
| 30. | | 1,780 | | 1,060 | 1-6 | 505 | 0-8 | 256 | | 236 | | |
| 31. | 3-2 | 1,980 | | 1,060 | | | | 267 | | | | |

MONTHLY DISCHARGE of Blaeberry River near Golden, for 1914.

(Drainage area 325 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| March. | 600 | 355 | 428 | 1-32 | 1-47 | 25,500 | D |
| April. | 1,310 | 600 | 905 | 2-78 | 3-20 | 55,600 | C |
| May | 3,120 | 1,260 | 2,210 | 6-80 | 7-59 | 132,000 | C |
| June | 3,290 | 1,360 | 2,340 | 7-20 | 8-30 | 144,000 | C |
| July | 2,760 | 880 | 1,520 | 4-68 | 5-40 | 93,500 | C |
| August | 1,060 | 425 | 608 | 1-87 | 2-09 | 36,200 | C |
| September | 660 | 256 | 422 | 1-30 | 1-50 | 25,900 | C |
| October | 324 | 236 | 278 | 0-86 | 0-96 | 16,500 | C |

BUGABOO CREEK (3003).

Location.—About 3 miles southwest of Spillimacheen Landing, 40 miles south of Golden, on downstream side of highway bridge 1 mile from mouth. Revelstoke district.

Records Available.—June to October, 1912; June to November, 1913; April 1 to December 15, 1914.

Climatic Conditions.—Summers hot and dry. Winters severe as low as 40° F. with light snowfall. The creek usually freezes over in November and does not open again till April. Frazil ice.

Gauge.—Vertical staff gauge, fastened to pier of bridge, and read daily during the open season by Mr. Jas. Montgomery.

Channel.—Straight for 100 feet above and below the gauge, the water is swift during freshet, there is one channel in low water and there are two at high stages.

Discharge Measurements.—Meterings are taken from the downstream side of the bridge, four being taken in 1912, eight in 1913, and three in 1914. A new curve was plotted in 1914, using 1912, 1913, and 1914 measurements.

Accuracy.—The control is apparently permanent. Daily gauge readings are obtained, and the 1914 curve appears reliable. Above a gauge height of 1.4 the results should be within 10 per cent and below 1.4, 15 per cent and 20 per cent.

DISCHARGE MEASUREMENTS of Bugaboo Creek near Spillimacheen Landing, for 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|--------------------|-----------|-------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 17..... | J. A. Elliott..... | 1,909 | 60 | 187 | 10.21 | 3.00 | 1,910 |
| July 31..... | "..... | 1,909 | 60 | 151 | 6.40 | 2.35 | 970 |
| Oct. 23..... | "..... | 1,909 | 34 | 96 | 1.71 | 1.10 | 164 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|-----------|---------------|------------|--------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge. | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-45 | 58 | 1-5 | 310 | 2-1 | 690 |
| 2 | 0-45 | 58 | 1-72 | 415 | 2-3 | 915 |
| 3 | 0-5 | 60 | 1-95 | 560 | 2-9 | 1,760 |
| 4 | 0-52 | 62 | 1-72 | 415 | 3-0 | 1,910 |
| 5 | 0-6 | 72 | 1-63 | 370 | 2-45 | 1,105 |
| 6 | 0-7 | 86 | 1-52 | 319 | 2-25 | 856 |
| 7 | 0-8 | 100 | 1-5 | 310 | 2-12 | 712 |
| 8 | 0-72 | 89 | 1-52 | 319 | 2-1 | 690 |
| 9 | 0-77 | 96 | 1-75 | 430 | 2-02 | 618 |
| 10 | 0-72 | 89 | 1-8 | 455 | 2-05 | 600 |
| 11 | 0-73 | 91 | 1-9 | 520 | 2-15 | 745 |
| 12 | 0-8 | 100 | 1-87 | 500 | 2-3 | 915 |
| 13 | 0-9 | 120 | 1-82 | 468 | 2-4 | 1,040 |
| 14 | 1-0 | 140 | 1-85 | 487 | 2-7 | 1,460 |
| 15 | 1-0 | 140 | 2-1 | 690 | 3-0 | 1,910 |
| 16 | 1-1 | 170 | 2-2 | 800 | 3-25 | 2,285 |
| 17 | 1-1 | 170 | 2-15 | 745 | 3-1 | 2,060 |
| 18 | 1-05 | 155 | 2-05 | 645 | 3-4 | 2,510 |
| 19 | 1-07 | 161 | 1-95 | 560 | 3-05 | 1,985 |
| 20 | 1-2 | 200 | 1-9 | 520 | 2-75 | 1,535 |
| 21 | 1-13 | 179 | 1-9 | 520 | 2-6 | 1,315 |
| 22 | 1-15 | 185 | 1-92 | 536 | 2-32 | 938 |
| 23 | 1-15 | 185 | 2-05 | 645 | 2-2 | 800 |
| 24 | 1-17 | 191 | 2-2 | 800 | 2-12 | 712 |
| 25 | 1-22 | 206 | 2-25 | 856 | 2-23 | 834 |
| 26 | 1-17 | 191 | 2-1 | 690 | 2-4 | 1,040 |
| 27 | 1-2 | 200 | 1-95 | 560 | 2-38 | 1,015 |
| 28 | 1-2 | 200 | 1-87 | 500 | 2-42 | 1,066 |
| 29 | 1-23 | 209 | 1-77 | 440 | 2-5 | 1,170 |
| 30 | 1-3 | 230 | 1-72 | 415 | 2-6 | 1,315 |
| 31 | | | 1-85 | 487 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2-75 | 1,540 | 2-5 | 1,170 | 1-80 | 455 | 1-55 | 333 | 1-27 | 221 | 1-05 | 155 |
| 2..... | 3-0 | 1,910 | 2-5 | 1,170 | 1-75 | 430 | 1-50 | 310 | 1-35 | 250 | 1-1 | 170 |
| 3..... | 3-45 | 2,580 | 2-42 | 1,066 | 1-80 | 455 | 1-50 | 310 | 1-25 | 215 | 1-0 | 140 |
| 4..... | 3-1 | 2,060 | 2-4 | 1,040 | 1-80 | 455 | 1-40 | 270 | 1-2 | 200 | 0-95 | 130 |
| 5..... | 3-1 | 2,060 | 2-25 | 856 | 1-85 | 488 | 1-40 | 270 | 1-2 | 200 | 1-05 | 155 |
| 6..... | 3-25 | 2,280 | 2-25 | 856 | 1-70 | 405 | 1-55 | 250 | 1-1 | 170 | 1-15 | 185 |
| 7..... | 3-1 | 2,060 | 2-4 | 1,040 | 1-70 | 405 | 1-38 | 262 | 1-1 | 170 | 1-2 | 200 |
| 8..... | 2-95 | 1,840 | 2-1 | 690 | 1-80 | 455 | 1-38 | 262 | 1-07 | 161 | 1-3 | 230 |
| 9..... | 2-9 | 1,760 | 2-0 | 600 | 1-70 | 405 | 1-35 | 250 | 1-07 | 161 | 1-25 | 215 |
| 10..... | 2-77 | 1,560 | 1-95 | 560 | 1-60 | 355 | 1-30 | 230 | 1-1 | 170 | 1-15 | 185 |
| 11..... | 2-85 | 1,680 | 1-9 | 520 | 1-70 | 405 | 1-30 | 230 | 1-1 | 170 | 0-95 | 130 |
| 12..... | 3-1 | 2,060 | 2-05 | 645 | 1-55 | 333 | 1-30 | 230 | 1-1 | 170 | 0-95 | 130 |
| 13..... | 3-0 | 1,910 | 2-1 | 690 | 1-40 | 270 | 1-30 | 230 | 1-0 | 140 | 0-85 | 110 |
| 14..... | 3-15 | 2,140 | 2-1 | 690 | 1-40 | 270 | 1-30 | 230 | 0-9 | 120 | 0-75 | 93 |
| 15..... | 2-9 | 1,760 | 2-15 | 745 | 1-40 | 270 | 1-27 | 221 | 0-9 | 120 | 0-7 | 86 |
| 16..... | 2-67 | 1,410 | 2-05 | 645 | 1-30 | 230 | 1-25 | 215 | 0-8 | 100 | Frozen. | |
| 17..... | 2-47 | 1,130 | 2-15 | 745 | 1-30 | 230 | 1-25 | 215 | 0-75 | 93 | | |
| 18..... | 2-6 | 1,320 | 2-0 | 600 | 1-50 | 310 | 1-35 | 250 | 0-65 | 79 | | |
| 19..... | 2-72 | 1,490 | 1-95 | 560 | 2-00 | 600 | 1-32 | 238 | 0-75 | 93 | | |
| 20..... | 2-70 | 1,460 | 2-05 | 645 | 1-65 | 380 | 1-3 | 230 | 1-0 | 140 | | |
| 21..... | 2-40 | 1,040 | 2-1 | 690 | 1-50 | 310 | 1-22 | 206 | 1-05 | 155 | | |
| 22..... | 2-20 | 800 | 2-1 | 690 | 1-40 | 270 | 1-15 | 185 | 1-0 | 140 | | |
| 23..... | 2-20 | 800 | 1-95 | 560 | 1-50 | 310 | 1-1 | 170 | 1-0 | 140 | | |
| 24..... | 2-30 | 915 | 1-85 | 488 | 1-50 | 310 | 1-1 | 170 | 1-1 | 170 | | |
| 25..... | 2-40 | 1,040 | 1-82 | 468 | 1-55 | 333 | 1-0 | 140 | 1-15 | 185 | | |
| 26..... | 2-3 | 910 | 1-85 | 488 | 1-85 | 488 | 1-1 | 170 | 1-0 | 140 | | |
| 27..... | 2-2 | 800 | 2-00 | 600 | 1-95 | 560 | 1-1 | 170 | 0-95 | 130 | | |
| 28..... | 2-3 | 920 | 2-00 | 600 | 1-75 | 430 | 1-1 | 170 | 1-0 | 140 | | |
| 29..... | 2-2 | 800 | 1-90 | 520 | 1-60 | 355 | 1-1 | 170 | 1-0 | 140 | | |
| 30..... | 2-3 | 920 | 1-95 | 560 | 1-50 | 310 | 1-15 | 185 | 1-15 | 185 | | |
| 31..... | 2-45 | 1,100 | 1-85 | 488 | ..... | ..... | 1-35 | 250 | ..... | ..... | ..... | ..... |

MONTHLY DISCHARGE of Bugaboo Creek near Spillimacheen, for 1914.

(Drainage area, 190 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage Area. | Total in Acre-feet. | |
| | | | | | | | |
| April..... | 856 | 310 | 525 | 2-76 | 3-18 | 32,300 | B. |
| May..... | 2,510 | 600 | 1,217 | 6-40 | 7-14 | 72,400 | B. |
| June..... | 2,385 | 800 | 1,486 | 7-82 | 9-02 | 91,400 | B. |
| July..... | 1,170 | 468 | 700 | 3-68 | 4-24 | 43,000 | B. |
| August..... | 560 | 230 | 375 | 1-97 | 2-20 | 22,300 | B. |
| September..... | 333 | 140 | 226 | 1-19 | 1-37 | 13,900 | B. |
| October..... | 250 | 79 | 156 | 0-82 | 0-92 | 9,300 | D. |

CANYON CREEK (3051).

Location.—Township 26, range 22, west 5th, mer. about one-half mile from Columbia river, and 6 miles from Golden. The spillways and the sluice of Columbia River Lumber Company's dam are used as weirs. Revelstoke district.

SESSIONAL PAPER No. 25e

Records Available.—June 15 to December 30, 1914.

Climatic Conditions.—Summers hot and little rainfall. Winters severe, as low as -50° F., with 10 to 15 feet of snow. (See Columbia River, Golden.)

NOTE.—It was intended to publish the "Records Available" in this result but, through an oversight, this is impossible. The results however, will be available at this office after April 1, 1915.

COLUMBIA RIVER, GOLDEN (3005.)

Location.—SW. $\frac{1}{4}$ sec. 12, township 27, range 22, west 5th, mer. above mouth of Kicking Horse river, one mile from Golden, B.C., 100 yards below the Columbia River Lumber Company's mill.

Records Available.—During the open season from 1903-14. Gauge heights from 1903-11 were obtained through the courtesy of the Columbia River Lumber Company. One ice measurement made in February, 1912, gave a discharge of 795 c.f.s., and one made in February, 1914, gave a discharge of 894 c.f.s.

Climatic Conditions.—In 1914 the precipitation amounted to 14.19 inches of which about 3 or 4 feet was snow. The summers are warm and fairly dry. The winters are very severe, as low as 50° F., during some winters, with a fairly heavy snowfall. Ice conditions generally exist from the middle of November till the end of March. Frazil ice may be expected.

Gauge.—Vertical staff gauge, referred to three bench-marks, and read daily by Mr. Jas. T. Wood during the open season.

Channel.—The section is located in the middle of a straight stretch of river of 1,500 feet. At low water there is a pronounced riffle 300 yards below the gauge, but at high water this riffle disappears.

Discharge Measurements.—Measurements are made from boat held by temporary cable about 100 yards below mill. Eight discharge measurements were made in 1912, five in 1913, and three in 1914.

Accuracy.—The gauge readings are good. Great difficulty is encountered in metering river at high water, and during June and July accuracy is not guaranteed to within 20 per cent, but in the remaining months it is probably within 15 per cent.

DISCHARGE MEASUREMENTS of Columbia River at Golden, B.C., 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|--------------------|-----------|--------|------------------|----------------|---------------|------------------|
| | | | Feet. | Sq. ft. | Ft per sec | Feet. | Sec-ft |
| Mar. 2 | C. E. W., W. J. G. | 1,048 | 175 | 616 | 1.45 | | 894 ¹ |
| July 30 | J. A. Elliott | 1,909 | 390 | 2,540 | 4.09 | 7.95 | 10,400 |
| Oct. 14 | " | 1,909 | 200 | 855 | 2.65 | 2.48 | 2,260 |

¹Ice conditions.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Golden, B.C.
for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | 1,900 | 3-15 | 3,020 | 6-15 | 7,120 |
| 2. | | 1,900 | 4-00 | 4,060 | 7-85 | 10,020 |
| 3. | | 1,900 | 4-05 | 4,120 | 7-50 | 9,350 |
| 4. | | 1,990 | 4-08 | 4,160 | 7-40 | 9,160 |
| 5. | 2-10 | 1,920 | 4-12 | 4,220 | 7-20 | 8,800 |
| 6. | 2-10 | 1,920 | 4-15 | 4,250 | 7-10 | 8,630 |
| 7. | 2-10 | 1,920 | 4-20 | 4,320 | 7-25 | 8,890 |
| 8. | 2-10 | 1,920 | 4-22 | 4,350 | 7-38 | 9,130 |
| 9. | 2-12 | 1,940 | 4-30 | 4,460 | 7-40 | 9,160 |
| 10. | 2-20 | 2,000 | 4-05 | 4,120 | 7-40 | 9,160 |
| 11. | 2-30 | 2,100 | 5-65 | 6,360 | 7-28 | 8,940 |
| 12. | 2-20 | 2,000 | 5-42 | 6,020 | 7-20 | 8,800 |
| 13. | 2-15 | 1,960 | 5-30 | 5,845 | 7-20 | 8,800 |
| 14. | 2-05 | 1,880 | 5-10 | 5,560 | 7-30 | 8,980 |
| 15. | 2-30 | 2,100 | 5-00 | 5,420 | 7-10 | 8,630 |
| 16. | 2-75 | 2,560 | 6-85 | 8,230 | 8-65 | 11,850 |
| 17. | 3-70 | 3,680 | 6-58 | 7,860 | 8-20 | 10,700 |
| 18. | 3-60 | 3,560 | 6-48 | 7,640 | 9-75 | 15,800 |
| 19. | 3-60 | 3,560 | 6-28 | 7,320 | 9-55 | 15,000 |
| 20. | 3-60 | 3,560 | 6-20 | 7,190 | 9-50 | 14,800 |
| 21. | 3-70 | 3,680 | 6-25 | 7,190 | 9-50 | 14,800 |
| 22. | 3-72 | 3,700 | 6-20 | 7,190 | 9-50 | 14,800 |
| 23. | 3-72 | 3,700 | 6-25 | 7,270 | 9-45 | 14,600 |
| 24. | 3-70 | 3,680 | 6-20 | 7,190 | 9-40 | 14,400 |
| 25. | 3-70 | 3,680 | 6-15 | 7,120 | 9-40 | 14,400 |
| 26. | 3-60 | 3,560 | 6-02 | 6,920 | 9-40 | 14,400 |
| 27. | 3-60 | 3,560 | 6-00 | 6,890 | 9-45 | 14,600 |
| 28. | 3-50 | 3,440 | 6-00 | 6,890 | 9-50 | 14,800 |
| 29. | 3-50 | 3,440 | 6-02 | 6,920 | 9-50 | 14,800 |
| 30. | 3-40 | 3,320 | 6-10 | 7,040 | 9-50 | 14,800 |
| 31. | | | 6-30 | 7,350 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Golden, B.C.,
for 1914—*Concluded.*

| Day. | July. | | August. | | September. | | October. | | November. | |
|------|---------------|-----------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 9-45 | 14,600 | 7-80 | 9,920 | 5-30 | 5,840 | 3-8 | 3,800 | 2-1 | 1,920 |
| 2. | 9-40 | 14,400 | 7-70 | 9,730 | 5-25 | 5,770 | 3-7 | 3,680 | 2-32 | 2,120 |
| 3. | 9-48 | 14,720 | 7-70 | 9,730 | 5-25 | 5,770 | 3-6 | 3,560 | 2-4 | 2,200 |
| 4. | 9-25 | 13,800 | 7-65 | 9,640 | 5-10 | 5,560 | 3-47 | 3,400 | 2-4 | 2,200 |
| 5. | 9-32 | 14,080 | 7-65 | 9,640 | 4-95 | 5,350 | 3-35 | 3,260 | 2-4 | 2,200 |
| 6. | 9-52 | 14,880 | 7-65 | 9,640 | 4-80 | 5,140 | 3-0 | 2,840 | 2-3 | 2,100 |
| 7. | 9-65 | 15,400 | 7-65 | 9,640 | 4-70 | 5,000 | 3-0 | 2,840 | 2-25 | 2,050 |
| 8. | 10-25 | 18,050 | 7-60 | 9,540 | 4-65 | 4,930 | 2-9 | 2,730 | 2-2 | 2,000 |
| 9. | 10-42 | 18,900 | 7-55 | 9,440 | 4-60 | 4,860 | 2-85 | 2,670 | 2-15 | 1,960 |
| 10. | 10-60 | 19,800 | 7-40 | 9,160 | 4-55 | 4,790 | 2-8 | 2,620 | 2-10 | 1,920 |
| 11. | 10-65 | 19,950 | 7-20 | 8,800 | 4-55 | 4,790 | 2-8 | 2,620 | 2-1 | 1,920 |
| 12. | 10-60 | 19,800 | 7-25 | 8,890 | 4-45 | 4,660 | 2-7 | 2,510 | 2-05 | 1,880 |
| 13. | 10-50 | 19,300 | 7-0 | 8,470 | 4-10 | 4,190 | 2-6 | 2,400 | 2-0 | 1,840 |
| 14. | 10-50 | 19,300 | 6-80 | 8,150 | 3-70 | 3,680 | 2-5 | 2,300 | 1-90 | 1,760 |
| 15. | 10-60 | 19,800 | 6-65 | 7,910 | 3-30 | 3,200 | 2-4 | 2,200 | 1-90 | 1,760 |
| 16. | 10-50 | 19,300 | 6-45 | 7,590 | 3-00 | 2,840 | 2-4 | 2,200 | 1-90 | 1,760 |
| 17. | 10-50 | 19,300 | 6-30 | 7,350 | 3-00 | 2,840 | 2-35 | 2,150 | Frozen. | 1,700 |
| 18. | 10-55 | 19,350 | 6-30 | 7,350 | 3-10 | 2,960 | 2-3 | 2,100 | ..... | 1,700 |
| 19. | 10-10 | 17,300 | 6-25 | 7,270 | 3-20 | 3,080 | 2-3 | 2,100 | ..... | 1,680 |
| 20. | 9-90 | 16,400 | 6-25 | 7,270 | 3-70 | 3,680 | 2-27 | 2,070 | ..... | 1,680 |
| 21. | 9-70 | 15,600 | 6-26 | 7,270 | 3-80 | 3,800 | 2-25 | 2,050 | ..... | 1,600 |
| 22. | 9-50 | 14,800 | 6-25 | 7,270 | 3-60 | 3,560 | 2-25 | 2,050 | ..... | 1,600 |
| 23. | 9-30 | 14,000 | 6-20 | 7,190 | 3-50 | 3,440 | 2-2 | 2,000 | ..... | 1,600 |
| 24. | 9-10 | 13,300 | 6-00 | 6,890 | 3-50 | 3,440 | 2-2 | 2,000 | ..... | 1,600 |
| 25. | 8-80 | 12,300 | 5-85 | 6,670 | 3-32 | 3,220 | 2-2 | 2,000 | ..... | 1,600 |
| 26. | 8-65 | 11,850 | 5-80 | 6,590 | 3-20 | 3,080 | 2-15 | 1,960 | ..... | 1,600 |
| 27. | 8-45 | 11,320 | 5-75 | 6,510 | 3-50 | 3,440 | 2-15 | 1,960 | ..... | 1,600 |
| 28. | 8-20 | 10,700 | 5-60 | 6,290 | 3-80 | 3,800 | 2-15 | 1,960 | ..... | 1,700 |
| 29. | 8-05 | 10,400 | 5-40 | 5,990 | ..... | 3,800 | 2-1 | 1,920 | ..... | 1,700 |
| 30. | 7-90 | 10,110 | 4-40 | 5,990 | ..... | 3,800 | 2-1 | 1,920 | ..... | 1,700 |
| 31. | 7-85 | 10,020 | 5-35 | 5,920 | ..... | ..... | 2-1 | 1,920 | ..... | ..... |

MONTHLY DISCHARGE of Columbia River at Golden, B.C., for 1914.

(Drainage area, 2,500 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| April | 3,700 | 1,900 | 2,731 | 1.092 | 1-218 | 182,450 | C |
| May | 8,230 | 3,020 | 6,014 | 2-405 | 2-773 | 369,700 | D |
| June | 15,800 | 7,120 | 11,604 | 4-642 | 5-170 | 691,200 | C |
| July | 10,050 | 10,020 | 15,582 | 6-233 | 7-180 | 953,000 | C |
| August | 9,920 | 5,920 | 7,991 | 3-196 | 3-685 | 491,600 | D |
| September | 5,840 | 2,840 | 4,110 | 1-66 | 1-85 | 246,000 | C |
| October | 3,800 | 1,920 | 2,440 | 0-98 | 1-13 | 150,000 | C |
| November | 2,200 | ..... | 1,820 | 0-73 | 0-81 | 108,000 | ..... |

COLUMBIA RIVER NEAR TRAIL (3008).

Location.—Fifteen miles above international boundary, above mouth of Pend d'Oreille river, below mouth of Kootenay, at the highway bridge near Trail, B.C., Nelson district.

Records Available.—May, 1913, to December, 1914.

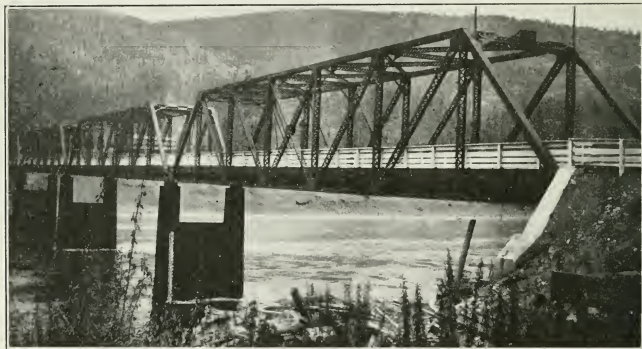
Climatic Conditions.—The climate at Trail is similar to Nelson, but a little more extreme, i.e., a little hotter in summer and colder in winter. The total precipitation is about the same. See Kootenay river near Nelson.

Gauge.—A chain gauge, 60.8 feet long, is read daily by Mr. C. A. Broderick.

Channel.—The river winds from the left (looking downstream), about 100 yards above the bridge; below, the river is straight for 400 yards. The control, a pronounced riffle 100 yards below the bridge, appears permanent.

Discharge Measurements.—Measurements are made from the upstream side of the traffic bridge. Eighteen well-distributed measurements have been made.

Accuracy.—Daily gauge readings have been obtained. Reliable measurements were made throughout the year. The gauge-height-discharge curve appears to be very good. The results should be within 10 per cent.



Nelson District (I)—Highway Bridge on Columbia river near Trail, showing metering section on upstream side of bridge.

DISCHARGE MEASUREMENTS of Columbia River near Trail, B.C., for 1914.

| Date. | Hydrographer. | Meter No | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------|----------------------------|----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Jan. 15 | C. E. Webb | 1048 | 485 | 6,250 | 3-57 | 9-50 | 22,300 |
| April 17 | D. O. B. G., C. E. W. | 1048 | 493 | 7,120 | 3-51 | 10-50 | 25,000 |
| June 2 | J. A. E., G. K. B. | 1909 | 61C | 15,600 | 9-68 | 28-3 | 151,090 |
| July 17 | D. O. B. G., J. A. E. | 1909 | 640 | 19,200 | 11-09 | 33-70 | 213,000 |
| Nov. 11 | J. A. E., G. K. B. | 1909 | 515 | 9,110 | 5-43 | 14-6 | 49,000 |
| 1915. | | | | | | | |
| Jan. 4 | do | 1929 | 475 | 6,834 | 3-42 | 10-0 | 23,400 |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River near Trail, B.C.,
for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 9.7 | 22,000 | 8.9 | 18,600 | 8.0 | 15,500 | 10.2 | 24,250 | 17.9 | 71,300 | 28.4 | 163,500 |
| 2..... | 9.6 | 21,500 | 8.9 | 18,600 | 8.0 | 15,500 | 10.1 | 23,750 | 18.3 | 74,400 | 28.3 | 163,000 |
| 3..... | 9.6 | 21,500 | 8.8 | 18,300 | 8.0 | 15,500 | 10.2 | 24,250 | 18.8 | 78,400 | 28.5 | 165,000 |
| 4..... | 9.6 | 21,500 | 8.8 | 18,300 | 8.0 | 15,500 | 10.3 | 24,750 | 19.4 | 83,200 | 28.9 | 169,000 |
| 5..... | 9.5 | 21,000 | 8.7 | 17,900 | 8.0 | 15,500 | 10.4 | 25,250 | 19.8 | 86,400 | 29.4 | 174,000 |
| 6..... | 9.5 | 21,000 | 8.7 | 17,900 | 8.0 | 15,500 | 10.5 | 25,750 | 20.3 | 90,400 | 29.8 | 178,000 |
| 7..... | 9.5 | 21,000 | 8.6 | 17,600 | 8.0 | 15,500 | 10.7 | 26,800 | 20.6 | 92,800 | 30.1 | 182,000 |
| 8..... | 9.5 | 21,000 | 8.6 | 17,600 | 8.1 | 15,800 | 10.9 | 27,800 | 21.1 | 96,800 | 30.4 | 184,500 |
| 9..... | 9.4 | 20,600 | 8.5 | 17,200 | 8.2 | 16,200 | 11.3 | 29,300 | 21.5 | 100,000 | 30.4 | 185,000 |
| 10..... | 9.5 | 21,000 | 8.5 | 17,200 | 8.2 | 16,200 | 11.5 | 30,500 | 21.9 | 104,000 | 30.2 | 183,000 |
| 11..... | 9.5 | 21,000 | 8.4 | 16,900 | 8.2 | 16,200 | 11.7 | 31,550 | 22.1 | 104,000 | 30.0 | 181,000 |
| 12..... | 9.5 | 21,000 | 8.4 | 16,900 | 8.2 | 16,200 | 11.9 | 32,600 | 22.4 | 107,000 | 29.9 | 179,000 |
| 13..... | 9.6 | 21,500 | 8.4 | 16,900 | 8.2 | 16,200 | 12.3 | 34,750 | 22.8 | 110,000 | 29.8 | 178,000 |
| 14..... | 9.6 | 21,500 | 8.3 | 16,500 | 8.3 | 16,500 | 12.7 | 36,950 | 23.4 | 115,500 | 30.0 | 181,000 |
| 15..... | 9.6 | 21,500 | 8.3 | 16,500 | 8.3 | 16,500 | 13.2 | 40,200 | 23.9 | 120,500 | 30.5 | 186,000 |
| 16..... | 9.5 | 21,000 | 8.2 | 16,200 | 8.3 | 16,500 | 13.8 | 43,500 | 24.6 | 126,000 | 30.9 | 190,000 |
| 17..... | 9.5 | 21,000 | 8.2 | 16,200 | 8.3 | 16,500 | 14.1 | 45,600 | 25.2 | 132,000 | 31.3 | 195,000 |
| 18..... | 9.5 | 21,000 | 8.2 | 16,200 | 8.4 | 16,900 | 14.5 | 47,850 | 25.7 | 137,000 | 32.1 | 204,000 |
| 19..... | 9.4 | 20,600 | 8.2 | 16,200 | 8.6 | 17,600 | 15.0 | 51,300 | 26.4 | 144,000 | 32.7 | 210,600 |
| 20..... | 9.4 | 20,600 | 8.2 | 16,200 | 8.5 | 17,200 | 15.5 | 54,800 | 26.7 | 146,500 | 33.4 | 218,000 |
| 21..... | 9.4 | 20,600 | 8.2 | 16,200 | 8.7 | 17,900 | 15.8 | 56,700 | 26.9 | 149,000 | 33.4 | 218,000 |
| 22..... | 9.3 | 20,200 | 8.1 | 15,800 | 8.8 | 18,300 | 16.1 | 58,800 | 27.2 | 152,000 | 33.6 | 220,000 |
| 23..... | 9.3 | 20,200 | 8.1 | 15,800 | 8.9 | 18,600 | 16.3 | 60,000 | 27.4 | 153,500 | 33.4 | 218,000 |
| 24..... | 9.3 | 20,200 | 8.1 | 15,800 | 9.1 | 19,400 | 16.6 | 62,100 | 27.7 | 157,000 | 32.7 | 210,000 |
| 25..... | 9.2 | 19,800 | 8.1 | 15,800 | 9.3 | 20,200 | 16.8 | 63,400 | 28.0 | 160,000 | 31.0 | 192,000 |
| 26..... | 9.2 | 19,800 | 8.1 | 15,800 | 9.5 | 21,000 | 17.0 | 64,800 | 28.2 | 162,000 | 31.8 | 200,000 |
| 27..... | 9.2 | 19,800 | 8.0 | 15,500 | 9.7 | 22,000 | 17.2 | 66,200 | 28.4 | 164,000 | 31.7 | 199,000 |
| 28..... | 9.1 | 19,400 | 8.0 | 15,500 | 9.9 | 23,000 | 17.4 | 67,600 | 28.6 | 166,000 | 31.6 | 197,500 |
| 29..... | 9.1 | 19,400 | ..... | ..... | 10.0 | 23,500 | 17.5 | 68,400 | 28.7 | 167,000 | 31.4 | 195,500 |
| 30..... | 9.0 | 19,000 | ..... | ..... | 10.1 | 24,000 | 17.6 | 69,100 | 28.6 | 166,000 | 31.3 | 194,500 |
| 31..... | 9.0 | 19,000 | ..... | ..... | 10.2 | 24,500 | ..... | ..... | 28.5 | 165,000 | ..... | ..... |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Columbia River, near Trail, B.C.,
for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 31-3 | 195,000 | 26-0 | 140,500 | 19-7 | 85,200 | 15-2 | 52,500 | 13-8 | 43,800 | 13-0 | 39,000 |
| 2 | 31-4 | 196,000 | 25-8 | 138,000 | 19-5 | 84,000 | 15-2 | 52,800 | 13-7 | 43,200 | 12-9 | 38,400 |
| 3 | 31-6 | 197,500 | 25-7 | 137,000 | 19-3 | 82,000 | 15-3 | 53,400 | 13-8 | 43,800 | 12-9 | 38,400 |
| 4 | 32-1 | 203,500 | 25-0 | 135,500 | 19-1 | 80,400 | 15-3 | 53,400 | 13-9 | 44,400 | 12-8 | 37,800 |
| 5 | 32-7 | 209,500 | 25-5 | 134,500 | 18-9 | 78,800 | 15-4 | 54,100 | 14-0 | 45,000 | 12-8 | 37,800 |
| 6 | 33-1 | 215,000 | 25-4 | 133,500 | 18-7 | 77,200 | 15-3 | 53,400 | 14-2 | 46,200 | 12-7 | 37,200 |
| 7 | 33-7 | 220,500 | 25-2 | 132,000 | 18-5 | 75,600 | 15-2 | 52,800 | 14-4 | 47,500 | 12-7 | 37,200 |
| 8 | 33-7 | 221,000 | 25-1 | 130,500 | 18-3 | 74,000 | 15-2 | 52,800 | 14-7 | 49,400 | 12-6 | 36,700 |
| 9 | 33-6 | 220,000 | 24-9 | 128,500 | 18-1 | 72,400 | 15-1 | 52,200 | 14-9 | 50,800 | 12-5 | 36,200 |
| 10 | 33-7 | 220,500 | 24-5 | 125,000 | 17-9 | 71,650 | 15-0 | 51,500 | 15-0 | 51,500 | 12-4 | 35,600 |
| 11 | 33-7 | 221,000 | 24-0 | 121,000 | 17-9 | 70,950 | 15-0 | 51,500 | 14-9 | 50,800 | 12-2 | 34,500 |
| 12 | 33-6 | 219,500 | 23-6 | 117,000 | 17-7 | 69,450 | 14-9 | 50,800 | 14-8 | 50,100 | 12-1 | 34,000 |
| 13 | 33-6 | 220,000 | 23-2 | 114,000 | 17-5 | 68,000 | 14-9 | 50,800 | 14-8 | 50,100 | 11-9 | 32,900 |
| 14 | 33-7 | 221,000 | 22-9 | 111,000 | 17-3 | 66,550 | 14-8 | 50,100 | 14-8 | 50,100 | 11-7 | 31,800 |
| 15 | 33-7 | 221,500 | 22-6 | 109,000 | 17-1 | 65,500 | 14-7 | 49,400 | 14-7 | 49,400 | 11-5 | 30,800 |
| 16 | 33-8 | 222,000 | 22-4 | 105,500 | 16-9 | 63,750 | 14-5 | 48,200 | 14-6 | 48,800 | 11-3 | 29,600 |
| 17 | 33-7 | 221,000 | 22-2 | 104,500 | 16-7 | 62,400 | 14-4 | 47,500 | 14-6 | 48,800 | 11-1 | 28,500 |
| 18 | 33-6 | 220,000 | 21-9 | 104,000 | 16-5 | 61,050 | 14-3 | 46,800 | 14-5 | 48,200 | 10-9 | 27,600 |
| 19 | 33-3 | 217,000 | 21-8 | 102,500 | 16-3 | 59,700 | 14-3 | 46,800 | 14-4 | 47,500 | 10-6 | 26,700 |
| 20 | 33-0 | 214,000 | 21-6 | 101,000 | 16-1 | 58,450 | 14-4 | 47,500 | 14-3 | 46,800 | 10-6 | 26,400 |
| 21 | 32-5 | 207,500 | 21-5 | 100,000 | 15-9 | 57,050 | 14-4 | 47,150 | 14-1 | 45,600 | 10-5 | 26,000 |
| 22 | 31-9 | 200,500 | 21-4 | 99,200 | 15-8 | 56,350 | 14-3 | 46,800 | 13-9 | 44,400 | 10-4 | 25,500 |
| 23 | 31-2 | 194,000 | 21-3 | 98,400 | 15-7 | 55,700 | 14-3 | 46,800 | 13-7 | 43,200 | 10-4 | 25,500 |
| 24 | 30-5 | 186,000 | 21-2 | 97,600 | 15-6 | 55,100 | 14-4 | 47,500 | 13-6 | 42,600 | 10-3 | 25,000 |
| 25 | 29-9 | 180,000 | 21-1 | 96,800 | 15-5 | 54,450 | 14-4 | 47,500 | 13-5 | 42,000 | 10-3 | 25,000 |
| 26 | 29-4 | 173,500 | 20-9 | 94,800 | 15-4 | 53,750 | 14-3 | 46,800 | 13-4 | 41,400 | 10-2 | 24,500 |
| 27 | 28-7 | 167,000 | 20-7 | 93,200 | 15-3 | 53,400 | 14-3 | 46,800 | 13-3 | 40,800 | 10-2 | 24,500 |
| 28 | 28-2 | 161,500 | 20-5 | 91,600 | 15-2 | 52,800 | 14-2 | 46,200 | 13-2 | 40,200 | 10-1 | 24,000 |
| 29 | 27-6 | 155,500 | 20-3 | 90,000 | 15-2 | 52,800 | 14-1 | 45,600 | 13-1 | 39,600 | 10-0 | 23,500 |
| 30 | 26-9 | 149,000 | 20-1 | 88,400 | 15-1 | 52,200 | 14-0 | 45,000 | 13-1 | 39,600 | 9-9 | 23,000 |
| 31 | 26-4 | 144,000 | 19-9 | 87,200 | ..... | ..... | 13-9 | 44,400 | ..... | ..... | 9-8 | 22,500 |

MONTHLY DISCHARGE of Columbia River, near Trail, for 1914.

(Drainage area, 34,000 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| January..... | 22,000 | 19,000 | 20,700 | 0-61 | 0-70 | 1,270,000 |
| February..... | 18,600 | 15,500 | 16,800 | 0-49 | 0-51 | 933,000 |
| March..... | 24,500 | 15,500 | 17,800 | 0-52 | 0-60 | 1,090,000 |
| April..... | 69,100 | 23,700 | 43,900 | 1-24 | 1-38 | 2,610,000 |
| May..... | 167,000 | 71,300 | 125,000 | 3-68 | 4-24 | 7,690,000 |
| June..... | 220,000 | 163,000 | 190,000 | 5-60 | 6-25 | 11,300,000 |
| July..... | 222,000 | 144,000 | 200,000 | 5-89 | 6-79 | 12,300,000 |
| August..... | 140,000 | 87,200 | 112,000 | 3-29 | 3-79 | 6,890,000 |
| September..... | 85,200 | 52,200 | 65,700 | 1-93 | 2-15 | 3,910,000 |
| October..... | 54,100 | 44,400 | 46,300 | 1-36 | 1-57 | 2,850,000 |
| November..... | 51,500 | 39,600 | 45,900 | 1-35 | 1-51 | 2,730,000 |
| December..... | 39,000 | 22,500 | 30,500 | 0-89 | 1-03 | 1,880,000 |

Accuracy "B".

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DUTCH CREEK, NEAR FAIRMONT SPRINGS (3035).

Location.—At highway bridge of Golden to Cranbrook road, half a mile from the mouth, which is almost at the outlet of Columbia lake. Revelstoke district.

Records Available.—April to August, 1914.

Climatic Conditions.—Summers, hot days, generally cool at nights, with very little rain. Winters, severe, as low as -40°F. , with a light snowfall. Frazil ice. The precipitation at the mouth is similar to that at Athalmer, q.v. Toby creek.

Gauge.—Vertical staff gauges were used throughout 1914. Gauge was changed owing to shifts in channel. Gauge was read by Mr. W. Magurn, an engineer on construction, Kootenay Central railway.

Channel.—The channel is wide, sandy, and shifting.

Discharge Measurements.—Measurements are made from highway bridge at mouth. In 1914, seven measurements were made.

Co-operation.—The station was maintained in 1914 by co-operation with the Water Rights Branch (Provincial).

Accuracy.—Owing to a large shift, due to high water in June, results after May are not guaranteed.

General.—Dutch creek rises on the easterly slope of the Selkirk range, and drains an area of about 250 square miles. It empties into Columbia lake, just above the outlet, and is the first large tributary of the Columbia river.

At present there is no development of power on Dutch creek, and the probable use of the water will be irrigation.

DISCHARGE MEASUREMENTS of Dutch Creek, near Fairmont Springs, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-----------|------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 8 | D. O'B. G. | 1,048 | 42.5 | 120 | 2.54 | 1.20 | 305 |
| April 10. | O. J. B. (Prov.) | 1,048 | | 122 | 0.86 | 0.40 | 104 |
| May 19 | " | 1,048 | | 214 | 3.36 | 1.70 | 719 |
| June 18.. | J. A. Elliott. | 1,909 | 93 | 386 | 7.16 | 3.00 | 2,760 |
| Aug. 1 | " | 1,909 | 70 | 146 | 3.60 | 1.58 | 525 |
| Sept. 22 | O. J. B. (Prov.) | | | 91 | 2.4 | 0.98 | 217 |
| Oct. 20.. | J. A. E.. | | 34 | 90.6 | 2.04 | 0.98 | 221 |

DAILY GAUGE HEIGHT AND DISCHARGE of Dutch Creek near Fairmont Springs'
B.C., for 1914.

| DAY. | April. | | May. | | June. | | July. | | August. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0-2 | 85 | 0-98 | 220 | 1-95 | 1,020 | 2-6 | 2,050 | 1-48 | 499 |
| 2 | 0-2 | 85 | 1-25 | 340 | 2-05 | 1,160 | 2-65 | 2,140 | 1-38 | 421 |
| 3 | 0-2 | 85 | 1-4 | 435 | 2-45 | 1,790 | 2-85 | 2,490 | 1-63 | 638 |
| 4 | 0-3 | 95 | 1-3 | 365 | 2-7 | 2,220 | 2-8 | 2,400 | 1-33 | 386 |
| 5 | 0-3 | 95 | 1-3 | 365 | 2-7 | 2,220 | 2-53 | 1,940 | 1-28 | 355 |
| 6 | 0-3 | 95 | 1-2 | 315 | 2-4 | 1,700 | 1-93 | 991 | 1-08 | 249 |
| 7 | 0-35 | 100 | 1-1 | 265 | 2-0 | 1,080 | 2-13 | 1,280 | 1-08 | 249 |
| 8 | 0-4 | 105 | 1-1 | 265 | 1-7 | 715 | 2-08 | 1,210 | 1-08 | 249 |
| 9 | 0-4 | 105 | 1-3 | 365 | 1-6 | 605 | 2-23 | 1,430 | 1-08 | 249 |
| 10 | 0-45 | 110 | 1-35 | 400 | 1-6 | 605 | ..... | 1,350 | 1-03 | 234 |
| 11 | 0-5 | 115 | 1-4 | 435 | 1-6 | 605 | ..... | 1,300 | 1-08 | 249 |
| 12 | 0-53 | 118 | 1-4 | 435 | 1-7 | 715 | ..... | 1,200 | 1-18 | 305 |
| 13 | 0-53 | 118 | 1-45 | 475 | 2-0 | 1,080 | ..... | 1,150 | 1-33 | 386 |
| 14 | 0-55 | 120 | 1-5 | 515 | 2-35 | 1,620 | ..... | 1,100 | 1-28 | 355 |
| 15 | 0-58 | 122 | 1-7 | 715 | 2-7 | 2,220 | ..... | 1,050 | 1-23 | 330 |
| 16 | 0-58 | 122 | 1-8 | 825 | 2-85 | 2,490 | ..... | 1,000 | 1-33 | 386 |
| 17 | 0-58 | 122 | 1-85 | 887 | 2-9 | 2,580 | 1-88 | 925 | 1-28 | 355 |
| 18 | 0-58 | 122 | 1-7 | 715 | 3-05 | 2,850 | 1-93 | 991 | 1-38 | 421 |
| 19 | 0-63 | 133 | 1-7 | 715 | 3-1 | 2,940 | 1-98 | 1,060 | 1-33 | 386 |
| 20 | 0-64 | 135 | 1-75 | 770 | 3-1 | 2,940 | 1-93 | 991 | 1-38 | 421 |
| 21 | 0-63 | 133 | 1-75 | 770 | 2-7 | 2,220 | 1-78 | 803 | 1-18 | 305 |
| 22 | 0-68 | 145 | 1-8 | 825 | 2-25 | 1,460 | 1-83 | 863 | 0-98 | 220 |
| 23 | 0-68 | 145 | 1-78 | 803 | 2-0 | 1,080 | 1-78 | 803 | 0-88 | 195 |
| 24 | 0-7 | 150 | 1-7 | 715 | 2-05 | 1,160 | 1-43 | 459 | ..... | 175 |
| 25 | 0-75 | 162 | 1-75 | 770 | 2-25 | 1,460 | 1-58 | 587 | ..... | 160 |
| 26 | 0-7 | 150 | 1-80 | 825 | 2-2 | 1,380 | 1-48 | 499 | ..... | 160 |
| 27 | 0-7 | 150 | 1-75 | 770 | 2-3 | 1,540 | 1-43 | 459 | ..... | 150 |
| 28 | 0-7 | 150 | 1-55 | 560 | 2-3 | 1,540 | 1-53 | 542 | ..... | 150 |
| 29 | 0-7 | 150 | 1-5 | 515 | 2-35 | 1,620 | 1-53 | 542 | ..... | 130 |
| 30 | 0-8 | 175 | 1-75 | 770 | 2-4 | 1,700 | 1-53 | 542 | ..... | 130 |
| 31 | ..... | ..... | 1-9 | 950 | ..... | ..... | 1-48 | 499 | ..... | 120 |

MONTHLY DISCHARGE of Dutch Creek near Fairmont Springs, B.C., for 1914.

(Drainage area, 250 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|--------|---------------------------|----------|---------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| April | 175 | 85 | 123-0 | 0-49 | 0-55 | 7,320 |
| May | 950 | 220 | 584-0 | 2-34 | 2-70 | 36,000 |
| June | 2,940 | 605 | 1,610-0 | 6-45 | 7-20 | 95,800 |
| July | 2,490 | 459 | 1,120-0 | 4-48 | 5-16 | 68,900 |
| August | 638 | ..... | 291-0 | 1-16 | 1-34 | 17,900 |

Accuracy "C".

FIELD SPRINGS, 1, 2, and 3 (3062, 3063, and 3064).

Location.—In township 28-18-5, about one-quarter mile east of the C.P.R. hotel at Field. Revelstoke district.

Records Available.—October 16 to December 31, 1914.

Climatic Conditions.—Summers: the days are generally hot and the nights cool; June is generally a wet month, but some years July and August are

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very dry, and at the end of August the springs may be very low. Winters: snow generally falls in October or November and remains till April, but the snowfall is not nearly as great as at Glacier; the temperature however, at times goes very low (-50°F).

Discharge Measurements.—Discharges are obtained on the two largest springs and a little creek (carrying practically all the water which comes to the surface) by means of weirs. Weir No. 1 is on a small creek immediately beyond the springs (starting from the hotel). This weir is located near the foot of a 25-foot fall on this creek. Weir No. 3 is on the smaller of the two springs gauged, as it shows that during extreme cold weather this spring ceases to flow. Weir No. 2 is immediately below the confluence of two or three small springs. Weir No. 2 is a rectangular weir 1.6 feet wide. Weirs Nos. 1 and 3 are triangle weirs, with a 90° .

These weirs were established to determine if there was sufficient water for a water supply for Field and also for the C.P.R. shops at Field.

DAILY GAUGE HEIGHT AND DISCHARGE Weir No. 1, of Field Springs near Field, B.C., for 1914.

| DAY. | October. | | November. | | December. | |
|------|--------------|-------------|--------------|------------|--------------|------------|
| | Gauge Height | Dis-charge. | Gauge Height | Dis-charge | Gauge Height | Dis-charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0-26 | 0-088 | 0-2 | 0-044 |
| 2 | | | 0-26 | 0-088 | 0-2 | 0-044 |
| 3 | | | 0-24 | 0-071 | 0-2 | 0-044 |
| 4 | | | 0-25 | 0-079 | 0-2 | 0-044 |
| 5 | | | 0-26 | 0-088 | 0-2 | 0-044 |
| 6 | | | 0-24 | 0-075 | 0-17 | 0-030 |
| 7 | | | 0-25 | 0-079 | 0-17 | 0-030 |
| 8 | | | 0-24 | 0-071 | 0-17 | 0-030 |
| 9 | | | 0-24 | 0-071 | 0-17 | 0-030 |
| 10 | | | 0-25 | 0-079 | 0-16 | 0-026 |
| 11 | | | 0-24 | 0-071 | 0-16 | 0-026 |
| 12 | | | 0-21 | 0-071 | 0-16 | 0-026 |
| 13 | | | 0-24 | 0-071 | 0-13 | 0-015 |
| 14 | | | 0-24 | 0-071 | 0-13 | 0-015 |
| 15 | | | 0-22 | 0-056 | 0-12 | 0-014 |
| 16 | | 0-28 | 0-106 | 0-24 | 0-071 | 0-13 |
| 17 | | 0-29 | 0-115 | 0-23 | 0-064 | 0-13 |
| 18 | | 0-29 | 0-115 | 0-23 | 0-064 | 0-13 |
| 19 | | 0-29 | 0-120 | 0-24 | 0-071 | 0-13 |
| 20 | | 0-29 | 0-115 | 0-24 | 0-071 | 0-12 |
| 21 | | 0-28 | 0-106 | 0-22 | 0-056 | 0-12 |
| 22 | | 0-27 | 0-097 | 0-21 | 0-050 | 0-12 |
| 23 | | 0-27 | 0-097 | 0-21 | 0-050 | 0-10 |
| 24 | | 0-27 | 0-097 | 0-21 | 0-050 | 0-10 |
| 25 | | 0-27 | 0-097 | 0-23 | 0-064 | 0-09 |
| 26 | | 0-27 | 0-097 | 0-21 | 0-050 | 0-09 |
| 27 | | 0-26 | 0-093 | 0-21 | 0-050 | 0-08 |
| 28 | | 0-26 | 0-088 | 0-21 | 0-050 | 0-09 |
| 29 | | 0-26 | 0-088 | 0-2 | 0-044 | 0-08 |
| 30 | | 0-26 | 0-088 | 0-2 | 0-044 | 0-08 |
| 31 | | 0-28 | 0-106 | | 0-08 | 0-005 |

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MONTHLY DISCHARGE of Field Springs at No. 1 Weir, Field, B.C., for 1914.

| MONTH. | DISCHARGE IN GALLONS. | | | |
|---------------|-----------------------|---------------------|-------|------------------|
| | Maximum daily flow. | Minimum daily flow. | Mean. | Mean daily flow. |
| October..... | 64,600 | 47,400 | .101 | 54,400 |
| November..... | 47,400 | 23,700 | .066 | 35,530 |
| December..... | 23,700 | 2,690 | .020 | 10,770 |

DAILY GAUGE HEIGHT AND DISCHARGE, Weir No. 2, Field Springs, near Field, B.C., for 1914.

| DAY. | October. | | November. | | December. | |
|---------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | | .280 | 0.16 | .340 |
| 2..... | | | | .280 | 0.16 | .340 |
| 3..... | | | 0.14 | .280 | 0.16 | .340 |
| 4..... | | | 0.14 | .280 | 0.16 | .340 |
| 5..... | | | 0.13 | .251 | 0.16 | .340 |
| 6..... | | | 0.15 | .310 | 0.15 | .310 |
| 7..... | | | 0.14 | .280 | 0.15 | .310 |
| 8..... | | | 0.14 | .280 | 0.15 | .310 |
| 9..... | | | 0.14 | .280 | 0.15 | .310 |
| 10..... | | | 0.15 | .310 | 0.15 | .310 |
| 11..... | | | 0.15 | .310 | 0.15 | .310 |
| 12..... | | | 0.15 | .310 | 0.15 | .310 |
| 13..... | | | 0.14 | .280 | 0.13 | .251 |
| 14..... | | | 0.14 | .280 | 0.14 | .280 |
| 15..... | | | 0.13 | .251 | 0.15 | .310 |
| 16..... | 0.25 | .666 | 0.13 | .251 | 0.15 | .310 |
| 17..... | 0.24 | .627 | 0.13 | .251 | 0.14 | .280 |
| 18..... | 0.26 | .707 | 0.13 | .251 | 0.14 | .280 |
| 19..... | 0.27 | .748 | 0.14 | .280 | 0.14 | .280 |
| 20..... | 0.26 | .707 | 0.15 | .310 | 0.16 | .340 |
| 21..... | 0.25 | .666 | 0.14 | .280 | 0.16 | .340 |
| 22..... | 0.245 | .647 | 0.14 | .280 | 0.16 | .340 |
| 23..... | 0.25 | .666 | 0.15 | .310 | 0.16 | .340 |
| 24..... | 0.245 | .647 | 0.15 | .310 | 0.16 | .340 |
| 25..... | | | 0.18 | .466 | 0.16 | .340 |
| 26..... | | | 0.16 | .340 | 0.16 | .340 |
| 27..... | | | 0.16 | .340 | 0.16 | .340 |
| 28..... | | | 0.16 | .340 | 0.15 | .310 |
| 29..... | | | 0.17 | .372 | 0.15 | .310 |
| 30..... | | | 0.16 | .340 | 0.16 | .340 |
| 31..... | | | | | 0.15 | .310 |

MONTHLY DISCHARGE of Field Springs, No. 2 Weir, Field, B.C., for 1914.

| MONTH. | DISCHARGE IN GALLONS. | | | |
|---------------|-----------------------|---------------------|-------|------------------|
| | Maximum daily flow. | Minimum daily flow. | Mean. | Mean daily flow. |
| November..... | 218,000 | 135,000 | 0.297 | 159,900 |
| December..... | 183,000 | 135,000 | 0.302 | 163,000 |

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DAILY GAUGE HEIGHT AND DISCHARGE Weir No. 3, Field Springs near Field, B.C., for 1914.

| DAY. | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|-------------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0-23 | 0-064 | 0-19 | 0-038 |
| 2 | | | 0-22 | 0-056 | 0-19 | 0-038 |
| 3 | | | 0-19 | 0-038 | 0-19 | 0-038 |
| 4 | | | 0-19 | 0-038 | 0-19 | 0-038 |
| 5 | | | 0-2 | 0-044 | 0-19 | 0-038 |
| 6 | | | 0-19 | 0-038 | 0-19 | 0-038 |
| 7 | | | 0-18 | 0-034 | 0-19 | 0-038 |
| 8 | | | 0-18 | 0-034 | 0-21 | 0-050 |
| 9 | | | 0-18 | 0-034 | 0-21 | 0-050 |
| 10 | | | 0-19 | 0-038 | 0-21 | 0-050 |
| 11 | | | 0-19 | 0-038 | 0-2 | 0-044 |
| 12 | | | 0-18 | 0-034 | 0-2 | 0-044 |
| 13 | | | 0-18 | 0-034 | 0-16 | 0-026 |
| 14 | | | 0-18 | 0-036 | 0-12 | 0-012 |
| 15 | | | 0-18 | 0-034 | | |
| 16 | | 0-07 | 0-18 | 0-034 | | |
| 17 | | 0-16 | 0-19 | 0-038 | No water flowing. | |
| 18 | | 0-18 | 0-19 | 0-038 | | |
| 19 | | 0-19 | 0-18 | 0-034 | | |
| 20 | | 0-19 | 0-19 | 0-038 | | |
| 21 | | 0-18 | 0-19 | 0-038 | | |
| 22 | | 0-18 | 0-19 | 0-038 | | |
| 23 | | 0-19 | 0-19 | 0-038 | | |
| 24 | | 0-18 | 0-19 | 0-038 | | |
| 25 | | 0-18 | 0-22 | 0-056 | | |
| 26 | | 0-18 | 0-19 | 0-038 | | |
| 27 | | 0-18 | 0-19 | 0-038 | | |
| 28 | | 0-18 | 0-19 | 0-038 | | |
| 29 | | 0-18 | 0-19 | 0-038 | | |
| 30 | | 0-19 | 0-19 | 0-038 | | |
| 31 | | 0-22 | 0-056 | | | |

MONTHLY DISCHARGE of Field Springs at No. 3 Weir, Field, B.C., for 1914.

| MONTH | DISCHARGE IN GALLONS. | | | |
|----------|-----------------------|--------------------|--------|-----------------|
| | Maximum daily flow | Minimum daily flow | Mean | Mean daily flow |
| October | 25,600 | 14,000 | 0-034 | 18,300 |
| November | 24,200 | 18,000 | 0-0304 | 21,000 |
| December | 26,000 | | 0-017 | 9,150 |

MONTHLY DISCHARGE of Field Springs River near Field for Total Discharge from three weirs.

| MONTH | GALLONS PER DAY |
|----------|-----------------|
| | Mean |
| October | 72,700 |
| November | 216,000 |
| December | 183,100 |

NOTE—See miscellaneous measurements "Field Creek" Weir No. 2 not included

FINDLAY CREEK NEAR CANAL FLATS (3036).

Location.—At highway bridge, on Findlay creek road, about 15 miles from mouth and 7 miles from Thunder Hill, B.C. Revelstoke district.

Records Available.—April 1 to December 31, 1914.

Climatic Conditions.—Precipitation at section similar to Invermere. (See Toby Creek.) Summers hot and dry. Winters severe, as low as -40°F. , with light snowfall. Frazil ice.

Gauge.—Vertical staff gauge, near Mason's cabin, about $1\frac{1}{2}$ miles below measuring section. Gauge is read by Mr. Octave Mason.

Channel.—Rocky above and below section. Not liable to shift.

Discharge Measurements.—Six measurements, one of which was high water, were made from the highway bridge in 1914.

Co-operation.—This station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—The result should be within 20 per cent.

General.—Findlay creek rises on the easterly slope of the Selkirk mountains, and flows into Kootenay river about 3 miles south of Canal Flats. Findlay creek drains an area of about 320 square miles. Up to the present this creek has been used for lumbering and placer mining.

DISCHARGE MEASUREMENTS of Findlay Creek at Canal Flats, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-----------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913 | | | | | | | |
| Oct. 24..... | O. J. B. (Prov.)..... | | | 104.0 | 2.81 | 0.80 | 294.0 |
| 1914 | | | | | | | |
| April 13..... | O. J. B. (Prov.)..... | | | 84.9 | 2.55 | 0.72 | 211.0 |
| June 18 | J. A. Elliott..... | 1909 | 59 | 374.8 | 10.52 | 6.20 | 3,940.0 |
| Aug. 1 | " | 1909 | 49 | 184.0 | 5.77 | 2.70 | 1,060.0 |
| Sept. 23..... | O. J. B. (Prov.)..... | | | 107.4 | 2.90 | 1.09 | 314.0 |
| Oct. 20..... | J. A. E..... | 1909 | 44 | 105.3 | 3.11 | 0.9 | 327.0 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Findlay Creek near Canal Flats,
B.C., for 1914.

| DAY. | April. | | May. | | June. | |
|---------|--------------|-----------|--------------|-----------|--------------|-------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge.. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 2.3 | 860 | 2.1 | 760 | 2.5 | 1,120 |
| 2..... | 2.3 | 860 | 2.2 | 810 | 3.6 | 1,640 |
| 3..... | 2.2 | 810 | 2.0 | 710 | 4.2 | 2,160 |
| 4..... | 2.2 | 810 | 1.7 | 580 | 5.2 | 2,970 |
| 5..... | 2.1 | 760 | 1.5 | 500 | 4.8 | 2,610 |
| 6..... | 2.1 | 760 | 1.5 | 500 | 4.4 | 2,260 |
| 7..... | 2.1 | 760 | 1.6 | 540 | 3.8 | 1,770 |
| 8..... | 2.1 | 760 | 1.7 | 580 | 3.2 | 1,370 |
| 9..... | 2.1 | 760 | 2.0 | 710 | 2.8 | 1,120 |
| 10..... | 1.0 | 348 | 2.1 | 760 | 2.8 | 1,120 |
| 11..... | 1.0 | 348 | 2.2 | 810 | 3.1 | 1,300 |
| 12..... | ..... | 327 | 2.1 | 760 | 3.4 | 1,510 |
| 13..... | 0.8 | 306 | 2.2 | 810 | 3.6 | 1,640 |
| 14..... | 0.8 | 306 | 2.7 | 1,060 | 4.6 | 2,430 |
| 15..... | 0.9 | 325 | 3.3 | 1,440 | 4.9 | 2,700 |
| 16..... | 0.9 | 325 | 3.8 | 1,770 | 5.7 | 3,460 |
| 17..... | 0.8 | 306 | 3.5 | 1,570 | 5.4 | 3,160 |
| 18..... | 0.7 | 288 | 3.4 | 1,510 | 6.2 | 3,950 |
| 19..... | 1.1 | 372 | 3.3 | 1,440 | 5.6 | 3,360 |
| 20..... | 1.2 | 400 | 3.0 | 1,240 | 4.8 | 2,610 |
| 21..... | 0.8 | 306 | 3.0 | 1,240 | 4.1 | 2,010 |
| 22..... | 0.8 | 306 | 3.0 | 1,240 | 3.4 | 1,510 |
| 23..... | 0.8 | 306 | 3.0 | 1,240 | 3.1 | 1,300 |
| 24..... | 0.8 | 306 | 3.3 | 1,440 | 2.9 | 1,180 |
| 25..... | 0.8 | 306 | 3.5 | 1,570 | 3.4 | 1,510 |
| 26..... | 0.7 | 288 | 3.2 | 1,370 | 3.7 | 1,700 |
| 27..... | 0.7 | 288 | 2.8 | 1,120 | 3.6 | 1,640 |
| 28..... | 0.8 | 306 | 2.6 | 1,010 | 3.6 | 1,640 |
| 29..... | 0.8 | 306 | 2.4 | 910 | 3.6 | 1,640 |
| 30..... | 0.8 | 306 | 2.4 | 910 | 3.8 | 1,770 |
| 31..... | ..... | ..... | ..... | 1,015 | ..... | ..... |

DAILY GAUGE HEIGHT AND DISCHARGE of Findlay Creek near Canal Flats, B.C., for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5.6 | 3,360 | 2.8 | 1,120 | 1.2 | 400 | 0.9 | 325 | 0.9 | 325 | 0.5 | 252 |
| 2 | 4.6 | 2,430 | | 1,080 | 1.4 | 460 | 0.9 | 325 | 0.7 | 288 | 0.5 | 252 |
| 3 | 5.0 | 2,790 | | 1,040 | 1.3 | 430 | 0.9 | 325 | 0.7 | 288 | 0.5 | 252 |
| 4 | 4.8 | 2,610 | | 1,000 | 1.4 | 460 | 0.9 | 325 | 0.7 | 288 | 0.5 | 252 |
| 5 | 5.4 | 3,160 | | 970 | 1.2 | 400 | 0.8 | 306 | 0.7 | 288 | 0.5 | 252 |
| 6 | 5.0 | 2,790 | | 940 | | 390 | 0.9 | 325 | 0.8 | 306 | 0.5 | 252 |
| 7 | 4.7 | 2,520 | | 900 | | 380 | 0.9 | 325 | 0.8 | 306 | 0.5 | 252 |
| 8 | 4.2 | 2,100 | | 860 | | 370 | 0.9 | 325 | 0.6 | 270 | 0.5 | 252 |
| 9 | 4.4 | 2,260 | | 830 | | 360 | 0.9 | 325 | 0.6 | 270 | 0.5 | 252 |
| 10 | 4.1 | 2,010 | | 800 | | 350 | 0.9 | 325 | 0.6 | 270 | 0.5 | 252 |
| 11 | 3.9 | 1,850 | | 770 | | 340 | 0.8 | 306 | 0.7 | 288 | 0.5 | 252 |
| 12 | 4.4 | 2,260 | | 740 | 0.9 | 325 | 0.8 | 306 | 0.6 | 270 | 0.5 | 252 |
| 13 | 4.3 | 2,180 | | 710 | 0.8 | 306 | 0.8 | 306 | 0.5 | 252 | 0.5 | 252 |
| 14 | 4.8 | 2,610 | | 680 | 0.7 | 288 | 0.8 | 306 | 0.5 | 252 | 0.5 | 252 |
| 15 | 4.7 | 2,520 | | 650 | 0.8 | 306 | 0.8 | 306 | 0.6 | 270 | 0.5 | 252 |
| 16 | 3.7 | 1,700 | 1.8 | 620 | 0.8 | 306 | 0.8 | 306 | 0.6 | 270 | 0.5 | 252 |
| 17 | 3.3 | 1,440 | 1.9 | 660 | 1.2 | 400 | 0.9 | 325 | 0.7 | 288 | 0.4 | 238 |
| 18 | 3.3 | 1,440 | 1.4 | 460 | 2.0 | 710 | 0.9 | 325 | 0.6 | 270 | 0.4 | 238 |
| 19 | 3.4 | 1,510 | 1.7 | 580 | 1.8 | 620 | 0.9 | 325 | 0.6 | 270 | 0.4 | 238 |
| 20 | 3.8 | 1,770 | | 620 | 1.4 | 460 | 0.7 | 288 | 0.6 | 270 | 0.4 | 238 |
| 21 | 3.2 | 1,370 | 1.9 | 660 | 1.2 | 400 | 0.7 | 288 | 0.6 | 270 | 0.4 | 238 |
| 22 | 2.4 | 910 | 1.7 | 580 | 1.0 | 348 | 0.7 | 288 | 0.6 | 270 | 0.4 | 238 |
| 23 | 2.4 | 910 | 1.4 | 460 | 0.9 | 325 | 0.6 | 270 | 0.6 | 270 | 0.4 | 238 |
| 24 | 2.7 | 1,060 | 1.4 | 460 | 1.1 | 372 | 0.6 | 270 | 0.6 | 270 | 0.4 | 238 |
| 25 | 2.6 | 1,010 | 1.2 | 400 | 1.0 | 348 | 0.6 | 270 | 0.6 | 270 | 0.4 | 238 |
| 26 | 2.6 | 1,010 | 1.0 | 348 | | 374 | 0.6 | 270 | 0.7 | 288 | 0.4 | 238 |
| 27 | 2.5 | 960 | 1.4 | 460 | 1.2 | 400 | 0.6 | 270 | 0.5 | 252 | 0.6 | 238 |
| 28 | 2.6 | 1,010 | 1.4 | 460 | 1.2 | 400 | 0.6 | 270 | 0.5 | 252 | 0.4 | 238 |
| 29 | 2.6 | 1,010 | 1.5 | 500 | 1.1 | 372 | 0.6 | 270 | 0.5 | 252 | 0.4 | 238 |
| 30 | 2.4 | 910 | 1.6 | 540 | 1.0 | 348 | 0.8 | 306 | 0.5 | 252 | 0.4 | 238 |
| 31 | 2.6 | 1,010 | 1.4 | 460 | | | 0.7 | 288 | | | 0.4 | 238 |

MONTHLY DISCHARGE of Findlay Creek at Canal Flats, for 1914.

(Drainage Area, 320 square miles).

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 860 | 288 | 461 | 1.44 | 1.61 | 27,400 |
| May | 1,770 | 500 | 1,030 | 3.22 | 3.71 | 63,360 |
| June | 3,950 | 1,120 | 2,000 | 6.25 | 6.97 | 119,000 |
| July | 3,360 | 910 | 1,820 | 5.68 | 6.55 | 112,000 |
| August | 1,120 | 400 | 688 | 2.15 | 2.48 | 42,300 |
| September | 710 | 288 | 392 | 1.23 | 1.37 | 23,300 |
| October | 325 | 270 | 303 | 0.95 | 1.10 | 18,600 |
| November | 325 | 252 | 275 | 0.86 | 0.96 | 16,400 |
| December | 252 | | 245 | 0.77 | 0.89 | 15,100 |

Accuracy "D."

SESSIONAL PAPER No. 25e

HORSETHIEF CREEK NEAR WILMER (3008).

Location.—On the east slope of the Selkirk mountains, on traffic bridge, 4 miles from Wilmer, and 1 mile from the mouth. Revelstoke district.

Records Available.—Open season, 1912-13-14; ice measurements, November, 1913, 147 c.f.s.

Climatic Conditions.—The precipitation at the mouth is similar to Wilmer, which, from December 1, 1913, to November 30, 1914, was 15.5 inches, of which about 3 feet was snow. The summers generally are hot in the days and cool in nights. The winters are severe, as low as -40° F., some seasons. Frazil ice is evident.

Gauge.—Vertical staff gauge, referred to three bench-marks, nailed to one bridge abutment. Capt. Ch. de Crespigny reads the gauge three times a week.

Channel.—The measuring section is not a desirable one. The control does not appear permanent, and there may be a backwater effect from the Columbia. Accurate measurements may not be obtained.

Discharge Measurements.—Meterings are taken from the bridge. Four measurements were made in 1912, and nine in 1913, and four in 1914.

Accuracy.—A big shift occurred in the early part of July, which made it impossible to publish results after July 15. The results before July 15 cannot be guaranteed.

DISCHARGE MEASUREMENTS of Horsethief Creek near Wilmer, B.C., for 1914.

(Drainage Area, 170 square miles.)

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 4 . . . | D. O'B. G. | 1048 | 85 | 166 | 2.17 | 1.55 | 361 ¹ |
| June 19 . . . | J. A. E. | 1909 | 101 | 335 | 7.47 | 2.65 | 2,300 |
| Aug 2 . . . | " | 1909 | 89 | 288 | 6.41 | 1.85 | 1,810 ¹ |
| Oct. 21 . . . | " | 1909 | 62 | 51.1 | 4.49 | 0.9 | 230 |

¹Flow in older channel affects gauge. Old gauge 0-5. Reading is no use.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Horsethief Creek near Wilmer, B.C., for 1914.

| DAY. | April. | | May. | | June. | | July. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 135 | 1.5 | 385 | | 1,100 | | 1,650 |
| 2 | 0.8 | 135 | | 400 | | 1,400 | | 1,990 |
| 3 | | 135 | | 420 | | 1,710 | 2.6 | 2,320 |
| 4 | 3.35 | 135 | | 440 | 2.5 | 2,020 | | 2,550 |
| 5 | 0.8 | 135 | 1.6 | 460 | 2.2 | 1,320 | | 2,770 |
| 6 | | 140 | 1.6 | 460 | | 1,140 | 2.8 | 3,000 |
| 7 | | 145 | | 460 | 2.0 | 950 | 2.9 | 3,400 |
| 8 | 0.9 | 150 | 1.6 | 460 | | 870 | | 3,400 |
| 9 | | 158 | | 480 | 1.9 | 790 | 2.9 | 3,400 |
| 10 | | 167 | | 500 | | 840 | | 3,550 |
| 11 | 1.0 | 175 | | 520 | | 900 | | 3,700 |
| 12 | | 175 | 1.7 | 540 | 2.0 | 950 | 3.0 | 3,850 |
| 13 | | 175 | | 540 | | 1,200 | 2.9 | 3,400 |
| 14 | 1.0 | 175 | | 540 | | 1,540 | 2.7 | 2,650 |
| 15 | | 225 | 1.7 | 540 | | 1,880 | | 2,090 |
| 16 | | 275 | | 745 | 2.6 | 2,320 | | |
| 17 | 1.4 | 325 | 2.0 | 950 | | 2,320 | | |
| 18 | | 325 | 2.0 | 950 | 2.6 | 2,320 | | |
| 19 | | 325 | 2.0 | 950 | | 2,070 | | |
| 20 | | 325 | | 910 | | 1,820 | | |
| 21 | | 325 | | 870 | | 1,570 | | |
| 22 | | 325 | | 830 | 2.2 | 1,320 | | |
| 23 | 1.4 | 325 | 1.9 | 790 | | 1,270 | | |
| 24 | | 325 | | 870 | | 1,220 | | |
| 25 | | 325 | 2.0 | 950 | | 1,170 | | |
| 26 | | 325 | 1.95 | 870 | 2.1 | 1,120 | | |
| 27 | 1.4 | 325 | 1.9 | 790 | | 1,120 | | |
| 28 | | 325 | | 720 | | 1,120 | | |
| 29 | | 325 | 1.8 | 650 | 2.1 | 1,120 | | |
| 30 | | 385 | | 720 | 2.2 | 1,320 | | |
| 31 | | | 1.9 | 790 | | | | |

MONTHLY DISCHARGE of Horsethief Creek near Wilmer, B.C., for 1914.

(Drainage area 170 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|--------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 385 | 135 | 240 | 1.41 | 1.57 | 14,300 |
| May | 950 | 385 | 650 | 3.85 | 4.44 | 40,000 |
| June | 2,320 | 790 | 1,390 | 8.20 | 9.15 | 82,700 |

HOSPITAL CREEK (Weir) (3053).

Location.—At dam above intake of old smelter flume, 1½ miles from Golden. Revelstoke district.

Records Available.—October to November, 1914. See miscellaneous measurements.

Climatic Conditions.—Similar to Golden. See Columbia river near Golden.

Weir.—Ten-foot Cippoletti weir.

Accuracy.—Readings are only made once a week by Mr. K. C. Robertson. Accuracy, 20 per cent.

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Co-operation.—The weir was established by Mr. O. J. Bergoust, Provincial Water Rights Branch. Mr. Bergoust kindly sends us copies of gauge readings.

General.—Hospital creek is a small stream flowing into Columbia river, a mile below Golden. Its only importance is in relation to its being a possible source of a water supply for Golden.

DAILY GAUGE HEIGHT AND DISCHARGE of Hospital Creek, near Golden, for 1914.

| DAY. | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|-------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. |
| | Inches. | Sec.-ft. | Inches. | Sec.-ft. | Inches. | Sec.-ft. |
| 1 | | 8.38 | 3.85 | 6.12 | | 3.36 |
| 2 | | 8.38 | | 5.92 | | 3.33 |
| 3 | | 8.38 | | 5.73 | | 3.30 |
| 4 | | 8.38 | | 5.53 | | 3.26 |
| 5 | | 8.38 | | 5.33 | | 3.32 |
| 6 | 4.75 | 8.38 | | 5.14 | 2.5 | 3.19 |
| 7 | | 8.10 | | 4.94 | | |
| 8 | | 7.90 | 3.25 | 4.74 | | |
| 9 | | 7.60 | | 4.52 | | |
| 10 | | 7.30 | | 4.30 | | |
| 11 | 4.25 | 7.08 | | 4.07 | | |
| 12 | | 7.03 | | 3.85 | | |
| 13 | | 6.99 | | 3.63 | | |
| 14 | | 6.95 | | 3.41 | | |
| 15 | | 6.91 | 2.5 | 3.19 | | |
| 16 | | 6.87 | | 3.30 | | |
| 17 | | 6.83 | | 3.40 | | |
| 18 | 4.12 | 6.79 | | 3.50 | | |
| 19 | | 6.66 | | 3.60 | | |
| 20 | | 6.53 | | 3.70 | | |
| 21 | | 6.40 | | 3.80 | | |
| 22 | | 6.27 | 2.85 | 3.90 | | |
| 23 | | 6.14 | | 3.83 | | |
| 24 | | 6.01 | | 3.76 | | |
| 25 | 3.75 | 5.88 | | 3.70 | | |
| 26 | | 5.91 | | 3.63 | | |
| 27 | | 5.95 | | 3.56 | | |
| 28 | | 5.98 | | 3.49 | | |
| 29 | | 6.02 | 2.62 | 3.42 | | |
| 30 | | 6.05 | | 3.39 | | |
| 31 | | 6.09 | | | | |

MONTHLY DISCHARGE of Hospital Creek, at Golden, B.C., for 1914.

(Drainage area, 18 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF | |
|----------|---------------------------|----------|-------|-----------------|-----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area. | Total in acre-feet |
| October | 8.38 | 5.88 | 7.00 | 0.39 | 0.45 | 430 |
| November | 6.12 | 3.19 | 4.15 | 0.23 | 0.26 | 247 |

ILLECILLEWAET RIVER, NEAR GLACIER (3010.)

Location.—In township 26, range 26, west 5, at the foot-bridge immediately above the railway bridge, 200 yards from C.P.R. hotel, Glacier. Revelstoke district.

Records Available.—June to December, 1913; open season, 1914.

Climatic Conditions.—The precipitation from December 1, 1913 to November 30, 1914, was 56·2 inches. The snowfall during that period was about 30 feet. The maximum snowfall since 1880, as recorded by the C.P.R., occurred in the winter of 1912-13, when 45 feet 1 inch of snow fell. The winters are not very severe, being slightly colder than Revelstoke. Frazil ice is to be contended with. The summers are short and the thermometer seldom goes over 85° F.

Gauge.—Vertical staff, marked in feet and inches, was used till November, when it was replaced by an enamel gauge marked in feet and tenths.

Channel.—The bed is rocky, and, during freshet, the water is very swift. The control appears permanent.

Discharge Measurements.—Twelve were made in 1913, and five in 1914, from foot-bridge near hotel.

Accuracy.—These results, though probably within 20 per cent, are not guaranteed.

DISCHARGE MEASUREMENTS of Illecillewaet River near Glacier, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------|-----------|--------|---------|------------------|----------------|-------------------|------------|
| | | | Feet. | Sq. ft. | | | | |
| June 10..... | J. A. E..... | 1909 | 36 | 35 | 4·29 | 0·85 | 150 | |
| July 25..... | do..... | 1909 | 34 | 52·2 | 4·39 | 1·20 | 229 | |
| Sept. 9..... | do..... | 1927 | 34 | 35·2 | 3·50 | 0·97 | 123 | |
| Oct. 12..... | do..... | 1909 | 29 | 19·95 | 1·75 | 0·49 | 35 | |
| Nov. 19..... | do..... | 1909 | 16 | 10·5 | 2·64 | 0·3 | 27·7 ¹ | |

¹New gauge. (See notes).

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DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Glacier,
for 1914.

| DAY. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | | 1-23 | 168 | 2-06 | 443 |
| 2. | | | 1-31 | 188 | 2-56 | 693 |
| 3. | | | 1-31 | 188 | 2-56 | 693 |
| 4. | | | 1-23 | 168 | 1-23 | 168 |
| 5. | | | 1-06 | 132 | 1-06 | 132 |
| 6. | | | 1-06 | 132 | 1-06 | 132 |
| 7. | | | 1-14 | 148 | 1-06 | 132 |
| 8. | | | 1-31 | 188 | 0-98 | 117 |
| 9. | | | 1-39 | 210 | 0-89 | 101 |
| 10. | | | 1-39 | 210 | 1-06 | 132 |
| 11. | | | 1-48 | 235 | 1-06 | 132 |
| 12. | 0-64 | 65 | 1-64 | 285 | 1-39 | 210 |
| 13. | 0-73 | 77 | 1-81 | 344 | 1-48 | 235 |
| 14. | 0-64 | 65 | 1-81 | 344 | 1-48 | 235 |
| 15. | 0-64 | 65 | 1-81 | 344 | 1-89 | 373 |
| 16. | 0-64 | 65 | 1-81 | 344 | 1-89 | 373 |
| 17. | 0-64 | 65 | 1-73 | 315 | 1-98 | 409 |
| 18. | 0-64 | 65 | 1-73 | 315 | 1-73 | 315 |
| 19. | 0-73 | 77 | 1-73 | 315 | 1-48 | 235 |
| 20. | 0-64 | 65 | 1-73 | 315 | 1-23 | 168 |
| 21. | 0-64 | 65 | 1-81 | 344 | 1-23 | 168 |
| 22. | 0-64 | 65 | 1-81 | 344 | 1-23 | 168 |
| 23. | 0-64 | 65 | 1-81 | 344 | 0-98 | 117 |
| 24. | 0-73 | 77 | 1-89 | 373 | 0-98 | 117 |
| 25. | 0-73 | 77 | 1-81 | 344 | 1-06 | 132 |
| 26. | 0-73 | 77 | 1-56 | 260 | 1-14 | 148 |
| 27. | 0-81 | 89 | 1-39 | 210 | 1-14 | 148 |
| 28. | 0-81 | 89 | 1-39 | 210 | 1-31 | 188 |
| 29. | 1-06 | 132 | 1-31 | 188 | 1-48 | 235 |
| 30. | 1-06 | 132 | 1-56 | 260 | 1-73 | 315 |
| 31. | | | 1-81 | 344 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Glacier, for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 1-89 | 373 | 2-48 | 649 | 1-64 | 285 | 0-64 | 65 | | 48 | 0-26 | 29 |
| 2. | 2-06 | 443 | 2-48 | 649 | 1-56 | 260 | 0-56 | 56 | | 48 | 0-26 | 29 |
| 3. | 2-31 | 560 | 2-31 | 560 | 1-64 | 285 | 0-39 | 39 | | 48 | 0-26 | 29 |
| 4. | 2-23 | 520 | 2-06 | 443 | 1-56 | 260 | 0-64 | 65 | | 47 | 0-26 | 29 |
| 5. | 2-23 | 520 | 2-31 | 560 | 1-23 | 168 | 0-56 | 56 | | 46 | 0-26 | 29 |
| 6. | 2-31 | 560 | 2-23 | 520 | 1-48 | 235 | 0-56 | 56 | | 45 | 0-26 | 29 |
| 7. | 2-06 | 443 | 2-06 | 443 | 1-64 | 285 | 0-64 | 65 | | 44 | 0-26 | 29 |
| 8. | 1-98 | 409 | 1-48 | 235 | 1-23 | 168 | 0-64 | 65 | | 43 | 0-26 | 29 |
| 9. | 2-06 | 443 | 1-48 | 235 | 0-98 | 117 | 0-56 | 56 | | 42 | | 29 |
| 10. | 2-31 | 560 | 1-56 | 260 | 0-98 | 117 | 0-56 | 56 | | 41 | | 29 |
| 11. | 2-39 | 602 | 1-56 | 260 | 0-98 | 117 | 0-48 | 48 | | 40 | | 29 |
| 12. | 2-39 | 602 | 1-39 | 210 | 1-06 | 132 | 0-56 | 56 | | 40 | | 29 |
| 13. | 2-39 | 602 | 1-23 | 168 | 0-73 | 77 | 0-56 | 56 | | 39 | | 29 |
| 14. | 2-23 | 520 | 1-48 | 235 | 0-73 | 77 | 0-64 | 65 | | 39 | | 29 |
| 15. | 1-89 | 373 | 1-64 | 285 | 0-64 | 65 | 0-81 | 89 | 0-39 | 39 | | 29 |
| 16. | 1-48 | 235 | 1-64 | 285 | 0-56 | 56 | 0-73 | 77 | 0-39 | 39 | | 29 |
| 17. | 1-73 | 315 | 1-73 | 315 | 0-73 | 77 | 0-64 | 65 | 0-39 | 39 | | 29 |
| 18. | 2-23 | 520 | 1-73 | 315 | 1-06 | 132 | 0-64 | 65 | 0-39 | 39 | | 29 |
| 19. | 2-06 | 443 | 1-64 | 285 | 0-81 | 89 | 0-56 | 56 | 0-36 | 37 | | 29 |
| 20. | 1-73 | 315 | 1-64 | 285 | 0-56 | 56 | 0-56 | 56 | 0-36 | 37 | | 29 |
| 21. | 1-48 | 235 | 1-73 | 315 | 0-56 | 56 | 0-39 | 39 | 0-36 | 37 | 0-26 | 29 |
| 22. | 1-48 | 235 | 1-56 | 260 | 0-64 | 65 | 0-39 | 39 | 0-36 | 37 | 0-26 | 29 |
| 23. | 1-48 | 235 | 1-56 | 260 | 0-64 | 65 | 0-39 | 39 | 0-36 | 37 | 0-21 | 26 |
| 24. | 1-39 | 210 | 1-64 | 285 | 0-98 | 117 | 0-39 | 39 | 0-36 | 37 | 0-26 | 29 |
| 25. | 1-39 | 210 | 1-73 | 315 | 1-06 | 132 | 0-39 | 39 | 0-36 | 37 | 0-21 | 26 |
| 26. | 1-31 | 188 | 1-56 | 260 | 0-89 | 101 | 0-39 | 39 | 0-36 | 37 | 0-26 | 29 |
| 27. | 1-31 | 188 | 1-56 | 260 | 0-89 | 101 | 0-48 | 48 | 0-31 | 33 | 0-26 | 29 |
| 28. | 1-89 | 373 | 1-64 | 285 | 0-56 | 56 | 0-48 | 48 | 0-31 | 33 | 0-21 | 26 |
| 29. | 1-89 | 373 | 1-64 | 285 | 0-56 | 56 | 0-39 | 39 | 0-31 | 33 | 0-21 | 26 |
| 30. | 2-31 | 560 | 1-64 | 285 | 0-64 | 65 | 0-39 | 39 | 0-26 | 29 | 0-16 | 23 |
| 31. | 2-48 | 649 | 1-64 | 285 | | | 0-48 | 48 | | | 0-16 | 23 |

MONTHLY DISCHARGE of Illecillewaet River, near Glacier, for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | |
|----------------|---------------------------|----------|-------|
| | Maximum. | Minimum. | Mean. |
| | May..... | 373 | 132 | 262 |
| June..... | 693 | 101 | 238 |
| July..... | 649 | 188 | 413 |
| August..... | 649 | 168 | 332 |
| September..... | 285 | 56 | 130 |
| October..... | 89 | 39 | 53-8 |
| November..... | 48 | 29 | 38-3 |
| December..... | 29 | 23 | 28-2 |

ILLECILLEWAET RIVER NEAR REVELSTOKE (3009).

Location.—This station is located within 1 mile of the city of Revelstoke, and 1 mile from the mouth of the river; the gauge is located on traffic bridge in SW. $\frac{1}{4}$ section 26, township 23, range 2, west 6th; the measuring section is located on traffic bridge in NE. $\frac{1}{4}$ section 22, township 23, range 2, west 6th.

SESSIONAL PAPER No. 25e

Records Available.—October to December, 1911; May to December, 1912; April to November, 1913; March to November, 1914; Ice measurement, on February 27th, 1912, gave discharge of 197 c.f.s.; on January, 7th, 1914, gave 500 c.f.s.

Gauge.—A chain gauge, referred to two bench-marks, is used and read by Miss S. Moran of Revelstoke.

Channel.—Measuring section is half a mile below gauge. The section at the gauge is very fast in high water, and at the measuring section there is a possibility of backwater from the Columbia during high water. The control at the gauge appears permanent.

Discharge Measurements.—Fourteen measurements were made in 1914, and a new curve was plotted.

Accuracy.—All measurements made this year are less than 10 per cent off the curve. Daily gauge readings are obtained but the chain gauge gives some trouble to the reader. The results should be within 15 per cent.

Climatic Conditions.—At Revelstoke the precipitation from December 1, 1913, to November 30, 1914, was approximately 40.5 inches. The snowfall was approximately 10 feet (C.P.R. records), and the precipitation during the months December to March was 18 inches, practically all of which would be snow at higher altitudes. The winters are not very severe, seldom below 10° F. Frazil ice may be expected. The summers are very hot, sometimes 95° and 100° F.

DISCHARGE MEASUREMENTS of Illecillewaet River, near Revelstoke, B.C.,
for 1914.

| Date. | Hydrographer. | Meter No | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|-------------------|-------------|--------|---------------------|-------------------|------------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Mar. 17 | C. E. Webb | 1,048 | 120 | 290.5 | 1.64 | 1.57 | 478 |
| May 18 | J. A. Elliott | 1,672 | 122 | 704 | 5.21 | 4.80 | 3,670 |
| June 9 | " | 1,909 | 123 | 661 | 5.25 | 4.70 | 3,450 |
| " 26 | " | 1,909 | 137 | 820 | 6.33 | 5.70 | 5,190 |
| July 25 | " | 1,909 | 136 | 763 | 4.63 | 4.50 | 3,540 |
| Aug. 11 | " | 1,909 | 125 | 556 | 3.71 | 3.75 | 2,060 ¹ |
| " 11 | " | 1,909 | 92 | 658 | 3.87 | 3.75 | 2,500 ² |
| Sept 5 | C. E. R., J. A. E | 1,927 | 130 | 506 | 3.57 | 3.24 | 1,800 ¹ |
| Oct 9 | J. F. E | 1,909 | 118 | 364 | 2.50 | 2.38 | 910 |
| Sept. 5 | J. A. P., C. E. R | 1,927 | 107 | 682 | 3.64 | 3.39 | 2,080 ² |
| Oct. 26 | R. G. S., G. E. W | | 147 | 325 | 2.49 | 1.95 | 809 |
| " 9 | J. A. E. | 1,909 | 87 | 482 | 2.16 | 2.40 | 1,040 ² |
| " 26 | " | 1,909 | 95 | 400 | 1.76 | 1.95 | 705 ² |
| Nov. 17 | " | 1,909 | 115 | 316 | 2.27 | 1.73 | 718 |

¹ At regular measuring section.

² At gauge section

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

| DAY. | March. | | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 400 | 1-7 | 520 | 3-8 | 2,460 | 5-2 | 4,350 |
| 2 | | 400 | 1-6 | 460 | 4-35 | 3,140 | 5-85 | 5,360 |
| 3 | | 400 | 1-5 | 400 | 4-7 | 3,620 | 6-75 | 6,900 |
| 4 | | 400 | 1-5 | 400 | 4-75 | 3,690 | 6-30 | 6,120 |
| 5 | | 400 | 2-1 | 790 | 4-8 | 3,760 | 5-60 | 4,960 |
| 6 | 1-6 | 460 | 2-3 | 935 | 4-8 | 3,760 | 5-00 | 4,050 |
| 7 | 1-6 | 460 | 2-8 | 1,370 | 4-7 | 3,620 | 4-80 | 3,760 |
| 8 | 1-6 | 460 | 2-85 | 1,420 | 4-5 | 3,340 | 4-5 | 3,340 |
| 9 | 1-5 | 400 | 2-95 | 1,520 | 4-5 | 3,340 | 4-7 | 3,620 |
| 10 | 1-6 | 460 | 3-0 | 1,570 | 4-4 | 3,210 | 5-35 | 4,580 |
| 11 | 1-5 | 400 | 2-7 | 1,270 | 4-2 | 2,950 | 5-35 | 4,580 |
| 12 | 2-3 | 935 | 2-95 | 1,520 | 4-2 | 2,950 | 5-6 | 4,960 |
| 13 | 1-6 | 460 | 3-2 | 1,770 | 5-05 | 4,120 | 5-9 | 5,450 |
| 14 | 1-6 | 460 | 3-4 | 1,990 | 5-2 | 4,350 | 6-50 | 6,460 |
| 15 | 2-0 | 720 | 3-4 | 1,990 | 5-25 | 4,420 | 6-50 | 6,460 |
| 16 | 2-9 | 1,470 | 3-4 | 1,990 | 5-10 | 4,200 | 6-60 | 6,630 |
| 17 | 1-8 | 585 | 3-35 | 1,940 | 5-05 | 4,120 | 6-70 | 6,810 |
| 18 | 1-65 | 490 | 3-5 | 2,100 | 4-75 | 3,690 | 6-70 | 6,810 |
| 19 | 1-75 | 552 | 3-2 | 1,770 | 4-85 | 3,830 | 6-40 | 6,290 |
| 20 | 1-85 | 618 | 3-1 | 1,670 | 4-65 | 3,550 | 6-30 | 6,120 |
| 21 | 1-85 | 618 | 3-1 | 1,670 | 5-1 | 4,200 | 5-50 | 4,800 |
| 22 | 1-8 | 585 | 3-1 | 1,670 | 5-25 | 4,425 | 4-95 | 3,980 |
| 23 | 1-8 | 585 | 3-1 | 1,670 | 5-5 | 4,800 | 4-70 | 3,620 |
| 24 | 1-7 | 520 | 3-2 | 1,770 | 5-35 | 4,880 | 4-60 | 3,480 |
| 25 | 1-7 | 520 | 3-35 | 1,940 | 5-50 | 4,800 | 4-70 | 3,620 |
| 26 | 1-7 | 520 | 3-35 | 1,940 | 5-20 | 4,350 | 5-70 | 5,120 |
| 27 | 1-7 | 520 | 3-45 | 2,040 | 5-00 | 4,050 | 5-50 | 4,800 |
| 28 | 1-7 | 520 | 3-45 | 2,040 | 4-80 | 3,760 | 5-50 | 4,800 |
| 29 | 1-7 | 520 | 3-5 | 2,100 | 4-45 | 3,280 | 5-50 | 4,800 |
| 30 | 1-7 | 520 | 3-65 | 2,280 | 4-15 | 3,880 | 5-90 | 5,450 |
| 31 | 1-7 | 520 | | | 4-50 | 3,340 | | |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet | Sec.-ft. | Feet. | Sec.-ft. | Feet | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5.9 | 5,450 | 4.9 | 3,900 | 3.40 | 1,990 | 2.9 | 1,470 | 2.4 | 1,010 | 1.30 | 290 |
| 2 | 6.45 | 6,380 | 4.75 | 3,690 | 3.25 | 1,820 | 2.8 | 1,370 | 2.4 | 1,010 | 1.40 | 340 |
| 3 | 6.8 | 6,990 | 5.05 | 4,120 | 3.25 | 1,820 | 2.6 | 1,180 | 2.2 | 860 | 1.40 | 340 |
| 4 | 6.9 | 7,170 | 4.6 | 3,480 | 3.45 | 2,040 | 2.40 | 1,010 | 2.4 | 1,010 | 1.50 | 400 |
| 5 | 6.95 | 7,260 | 4.6 | 3,480 | 3.70 | 2,340 | 2.30 | 935 | 2.4 | 1,010 | 1.40 | 340 |
| 6 | 6.5 | 6,460 | 4.6 | 3,480 | 3.45 | 2,040 | 2.25 | 900 | 2.15 | 825 | 1.6 | 460 |
| 7 | 6.25 | 6,040 | 4.4 | 3,210 | 3.25 | 1,820 | 2.20 | 860 | 2.2 | 860 | 1.6 | 460 |
| 8 | 5.75 | 5,200 | 3.65 | 2,280 | 3.40 | 1,990 | 2.30 | 935 | 2.4 | 1,010 | | |
| 9 | 5.8 | 5,280 | 3.4 | 1,990 | 2.90 | 1,470 | 2.25 | 900 | 2.2 | 860 | Frozen | |
| 10 | 5.95 | 5,540 | 3.6 | 2,220 | 2.70 | 1,270 | 2.30 | 935 | 2.1 | 790 | | |
| 11 | 6.25 | 6,040 | 3.8 | 2,460 | 2.65 | 1,220 | 2.2 | 860 | 2.00 | 720 | | |
| 12 | 6.4 | 6,290 | 4.0 | 2,700 | 2.70 | 1,270 | 2.2 | 860 | 2.00 | 720 | | |
| 13 | 6.3 | 6,120 | 4.25 | 3,020 | 2.40 | 1,010 | 2.1 | 790 | 2.00 | 720 | | |
| 14 | 6.4 | 6,290 | 4.0 | 2,700 | 2.30 | 935 | 2.1 | 790 | 1.90 | 650 | | |
| 15 | 6.7 | 6,810 | 4.1 | 2,820 | 2.10 | 790 | 2.2 | 860 | 1.70 | 520 | | |
| 16 | 5.4 | 4,650 | 4.05 | 2,760 | 2.10 | 790 | 2.1 | 790 | 1.90 | 650 | | |
| 17 | 5.05 | 4,120 | 3.85 | 2,520 | 1.90 | 650 | 2.5 | 1,090 | 1.70 | 520 | | |
| 18 | 5.3 | 4,500 | 4.05 | 2,760 | 2.30 | 1,090 | 2.3 | 935 | 1.70 | 520 | | |
| 19 | 5.35 | 4,580 | 4.05 | 2,760 | 2.30 | 1,090 | 2.2 | 860 | 1.70 | 520 | | |
| 20 | 5.45 | 4,720 | 3.90 | 2,580 | 2.10 | 790 | 2.1 | 790 | 1.90 | 650 | | |
| 21 | 5.2 | 4,350 | 4.10 | 2,820 | 2.35 | 970 | 2.25 | 898 | 1.80 | 585 | | |
| 22 | 4.45 | 3,280 | 4.10 | 2,820 | 2.40 | 1,010 | 2.1 | 790 | 1.80 | 585 | | |
| 23 | 4.15 | 2,880 | 4.10 | 2,820 | 2.40 | 1,010 | 2.0 | 720 | 1.30 | 290 | | |
| 24 | 4.4 | 3,210 | 3.55 | 2,160 | 2.65 | 1,220 | 2.1 | 790 | 1.65 | 490 | | |
| 25 | 4.5 | 3,340 | 3.80 | 2,460 | 2.7 | 1,270 | 2.0 | 720 | 1.80 | 585 | | |
| 26 | 4.1 | 2,820 | 3.90 | 2,580 | 2.9 | 1,470 | 1.7 | 520 | 1.90 | 650 | | |
| 27 | 4.1 | 2,820 | 3.95 | 2,640 | 2.9 | 1,470 | 1.8 | 585 | 1.80 | 585 | | |
| 28 | 4.15 | 2,880 | 3.80 | 2,460 | 2.9 | 1,470 | 1.8 | 585 | 1.80 | 585 | | |
| 29 | 4.5 | 3,340 | 3.45 | 2,040 | 2.8 | 1,370 | 1.7 | 520 | 1.70 | 520 | | |
| 30 | 4.5 | 3,340 | 3.50 | 2,100 | 2.8 | 1,090 | 1.7 | 520 | 1.70 | 520 | | |
| 31 | 4.75 | 3,690 | 3.45 | 2,040 | | | 2.4 | 1,010 | | | | |

MONTHLY DISCHARGE of Illecillewaet River, near Revelstoke, for 1914.

(Drainage area, 480 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|---------|-------|------------------|----------------------------------|--------------------|----------|
| | Maximum. | Minimum | Mean. | Per square mile. | Depth in inches on Drainage area | Total in acre-feet | |
| | | | | | | | |
| March | 1,470 | | 545 | 1.13 | 1.30 | 33,500 | |
| April | 2,280 | 400 | 1,550 | 3.23 | 3.60 | 92,200 | C |
| May | 4,880 | 2,460 | 3,790 | 7.90 | 9.11 | 233,000 | B |
| June | 6,900 | 3,340 | 5,100 | 10.6 | 11.8 | 303,000 | B |
| July | 7,200 | 2,820 | 4,900 | 10.2 | 11.8 | 301,000 | B |
| August | 4,120 | 1,990 | 2,770 | 5.77 | 6.65 | 170,000 | B |
| September | 2,340 | 650 | 1,350 | 2.81 | 3.14 | 80,300 | B |
| October | 1,470 | 520 | 807 | 1.80 | 2.08 | 53,300 | B |
| November | 1,010 | 290 | 694 | 1.45 | 1.62 | 41,300 | B |

INCOMAPPLEUX RIVER NEAR BEATON (ALSO CALLED FISH CREEK)
(3030).

Location.—Immediately outside the southern limit of the Railway Belt, 2 miles from the mouth, near Beaton, on the northeast arm, Arrow lakes, Revelstoke district.

Records Available.—May to December, 1914.

Climatic Conditions.—The precipitation is similar at the mouth to that of Revelstoke. The snowfall is very heavy in the hills. The river is glacial fed. The winters are not very severe, as low as 10° F. Frazil ice may be expected. The summers are hot.

Gauge.—A chain gauge located near his ranch is read daily by Mr. Jas. Burbridge.

Channel.—At the gauge the water is fast, the control has not been studied. The measuring section is satisfactory.

Discharge Measurements.—Six well-distributed measurements were made in 1914.

Accuracy.—The measurements should be fairly accurate, the gauge readings are daily but the gauge is not very reliable.

General.—The Incomappleux river is a stream about 42 miles long. It has its source in the Selkirks behind Glacier, from mountains 8,000 to 10,000 feet high. It flows through a heavily timbered country in which extensive limits are held by the Arrow Lake Lumber Company and the Dominion Saw-mills. There is practically no agricultural land in the whole valley. There are several mining claims, particularly around Cambourne, about 5 miles from the mouth. The stream is swift, from 50 to 100 feet wide, and from 3 feet to 10 feet in depth. The river is not navigable, but is suitable for logging purposes.

Incomappleux River.

General Power Possibilities.—There is a canyon on this river about 22 miles from the mouth. This canyon is about 3,000 feet long, and in it there is a fall of 100 feet. The width varies from 60 to 100 feet at the bottom, and the walls, which are of a broken rock formation, are high and steep.

There is very little natural storage, so, for a large development, artificial storage is required. By installing a very high dam (200 to 400 ft.) at a point in the canyon where the desired rock formation may be obtained, water could be penned back over a large flat on which lies the old townsite of Camborne. With a head of 300 feet and this storage, a probable 24-hour, 12-months development of 30,000 H.P. could be obtained. This would be an expensive installation.

Small summer industrial power of from 100 to 300 H.P. may be obtained on the following tributaries:—

- Sable creek
- Pool creek
- Lexington creek
- Boyd creek

The flow in each case is small but high heads may be obtained.

SESSIONAL PAPER No. 25e

DISCHARGE MEASUREMENTS of Incomappleux River, near Beaton, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|--------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | ! Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 21..... | J./A. Elliott..... | 1672 | 96 | 763 | 4.46 | 4.8 | 3,410 |
| June 19..... | G./K. B..... | 1927 | 96 | 973 | 5.41 | 6.1 | 5,360 |
| June 27..... | J. A. E..... | 1909 | 98 | 902 | 6.11 | 5.6 | 5,520 |
| Sept. 4..... | "..... | 1927 | 98 | 752 | 4.01 | 4.15 | 3,020 |
| Oct. 27..... | "..... | 1909 | 91 | 564 | 1.65 | 2.8 | 935 |
| Nov. 20..... | "..... | 1909 | 92 | 490 | 1.57 | 2.6 | 768 |

Fol. 847

DAILY GAUGE HEIGHT AND DISCHARGE of Incomappleux River, near Beaton, for 1914.

| Day. | April. | | May. | | June. | |
|---------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft./! | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 4.2 | 2,750 | 5.65 | 4,030 |
| 2..... | | | 4.8 | 3,630 | 5.80 | 5,340 |
| 3..... | | | 5.25 | 4,370 | 6.90 | 7,360 |
| 4..... | | | 4.45 | 3,100 | 6.70 | 6,980 |
| 5..... | | | 4.25 | 2,820 | 5.70 | 5,160 |
| 6..... | | | 4.05 | 2,540 | 5.15 | 4,200 |
| 7..... | | | 4.0 | 2,470 | 4.70 | 3,470 |
| 8..... | | | 4.0 | 2,470 | 4.45 | 3,100 |
| 9..... | | | 4.5 | 3,170 | 4.50 | 3,170 |
| 10..... | | | 4.45 | 3,100 | 4.65 | 3,390 |
| 11..... | | | 4.5 | 3,170 | 4.90 | 3,790 |
| 12..... | | | 4.7 | 3,470 | 5.30 | 4,460 |
| 13..... | | | 4.9 | 3,790 | 5.65 | 5,070 |
| 14..... | | | 5.2 | 4,290 | 6.30 | 6,240 |
| 15..... | | | 5.2 | 4,290 | 6.75 | 7,070 |
| 16..... | | | 5.3 | 4,460 | 6.7 | 6,980 |
| 17..... | | | 5.1 | 4,120 | 6.95 | 7,460 |
| 18..... | | | 4.85 | 3,710 | 7.0 | 7,560 |
| 19..... | | | 4.65 | 3,390 | 6.55 | 6,680 |
| 20..... | | | 4.55 | 3,240 | 5.95 | 5,610 |
| 21..... | 3.6 | 1,930 | 4.75 | 3,550 | 5.35 | 4,540 |
| 22..... | 3.55 | 1,860 | 5.05 | 4,030 | 5.05 | 4,030 |
| 23..... | 3.5 | 1,800 | 5.35 | 4,540 | 4.75 | 3,550 |
| 24..... | 3.6 | 1,930 | 5.45 | 4,710 | 4.65 | 3,390 |
| 25..... | 3.65 | 2,000 | 5.35 | 4,540 | 4.90 | 3,790 |
| 26..... | 3.60 | 1,930 | 4.95 | 3,870 | 5.50 | 4,800 |
| 27..... | 3.65 | 2,000 | 4.55 | 3,240 | 5.55 | 4,890 |
| 28..... | 3.7 | 2,060 | 4.3 | 2,890 | 5.45 | 4,710 |
| 29..... | 3.7 | 2,060 | 4.1 | 2,610 | 5.50 | 4,800 |
| 30..... | 3.9 | 2,330 | 4.1 | 2,610 | 5.90 | 5,520 |
| 31..... | | | 4.35 | 2,960 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Incomappleux, River near Beaton, for 1914—Concluded.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 6-4 | 6,420 | 5-8 | 5,340 | 3-80 | 2,190 | 3-85 | 2,260 | 3-35 | 1,620 | 2-5 | 690 |
| 2. | 6-95 | 7,460 | 5-75 | 5,250 | 3-85 | 2,260 | 3-75 | 2,120 | 3-45 | 1,740 | 2-5 | 690 |
| 3. | 7-45 | 8,430 | 5-75 | 5,250 | 4-10 | 2,610 | 3-50 | 1,800 | 3-3 | 1,560 | 2-4 | 595 |
| 4. | 7-45 | 8,430 | 5-3 | 4,460 | 4-35 | 2,960 | 3-35 | 1,620 | 3-3 | 1,560 | 2-4 | 595 |
| 5. | 7-55 | 8,630 | 4-95 | 3,870 | 3-95 | 2,400 | 3-25 | 1,500 | 3-25 | 1,500 | 2-4 | 595 |
| 6. | 7-25 | 8,030 | 5-35 | 4,540 | 3-65 | 2,000 | 3-20 | 1,440 | 3-15 | 1,380 | 2-3 | 510 |
| 7. | 6-9 | 7,360 | 5-15 | 4,200 | 3-85 | 2,260 | 3-20 | 1,440 | 3-1 | 1,320 | 2-2 | 435 |
| 8. | 6-55 | 6,690 | 4-35 | 2,960 | 4-15 | 2,680 | 3-20 | 1,440 | 3-1 | 1,320 | 2-2 | 435 |
| 9. | 6-35 | 6,330 | 4-0 | 2,470 | 3-65 | 2,000 | 3-15 | 1,380 | 3-05 | 1,260 | 2-1 | 375 |
| 10. | 6-55 | 6,690 | 4-35 | 2,960 | 3-40 | 1,680 | 3-05 | 1,260 | 3-0 | 1,200 | 2-1 | 375 |
| 11. | 6-75 | 7,070 | 4-14 | 2,680 | 3-75 | 2,120 | 3-05 | 1,260 | 3-0 | 1,200 | 2-0 | 325 |
| 12. | 7-35 | 8,290 | 4-45 | 3,100 | 3-35 | 1,620 | 3-0 | 1,200 | 2-9 | 1,090 | 2-0 | 325 |
| 13. | 7-25 | 8,030 | 4-65 | 3,390 | 3-15 | 1,380 | 2-95 | 1,140 | 2-9 | 1,090 | 1-9 | 320 |
| 14. | 7-10 | 7,750 | 4-85 | 3,710 | 3-10 | 1,320 | 2-85 | 1,040 | 2-8 | 990 | 2-1 | 320 |
| 15. | 7-55 | 8,630 | 4-9 | 3,790 | 3-05 | 1,260 | 2-9 | 1,090 | 2-8 | 990 | Frozen. | 320 |
| 16. | 5-80 | 5,340 | 4-75 | 3,550 | 2-95 | 1,140 | 3-05 | 1,260 | 2-6 | 790 | | 320 |
| 17. | 5-35 | 4,540 | 4-8 | 3,630 | 2-90 | 1,090 | 3-5 | 1,800 | 2-6 | 790 | | 320 |
| 18. | 5-75 | 5,250 | 4-55 | 3,240 | 3-40 | 1,680 | 3-4 | 1,680 | 2-6 | 790 | | 320 |
| 19. | 6-15 | 5,970 | 4-65 | 3,390 | 3-90 | 2,330 | 3-35 | 1,620 | 2-6 | 790 | | 320 |
| 20. | 6-15 | 5,970 | 5-05 | 4,030 | 3-40 | 1,680 | 3-25 | 1,500 | 2-6 | 790 | | 320 |
| 21. | 5-05 | 4,030 | 4-9 | 3,790 | 3-25 | 1,500 | 3-05 | 1,260 | 2-6 | 790 | | 320 |
| 22. | 4-5 | 3,170 | 4-8 | 3,630 | 3-10 | 1,320 | 2-9 | 1,090 | 2-6 | 790 | | 320 |
| 23. | 4-45 | 3,100 | 4-10 | 2,610 | 3-15 | 1,380 | 2-9 | 1,090 | 2-6 | 790 | | 320 |
| 24. | 4-9 | 3,790 | 4-10 | 2,610 | 3-35 | 1,620 | 2-85 | 1,040 | 2-6 | 790 | | 320 |
| 25. | 4-85 | 3,710 | 4-10 | 2,610 | 3-45 | 1,740 | 2-8 | 990 | 2-6 | 790 | | 320 |
| 26. | 4-5 | 3,170 | 4-20 | 2,750 | 3-70 | 2,060 | 2-8 | 990 | 2-7 | 890 | | 320 |
| 27. | 4-4 | 3,030 | 4-30 | 2,890 | 4-35 | 2,960 | 2-8 | 990 | 2-7 | 890 | | 320 |
| 28. | 4-65 | 3,390 | 4-40 | 3,030 | 3-65 | 2,000 | 2-75 | 940 | 2-7 | 890 | | 320 |
| 29. | 4-55 | 3,240 | 4-20 | 2,750 | 3-45 | 1,740 | 2-7 | 890 | 2-6 | 790 | | 320 |
| 30. | 5-1 | 4,120 | 4-20 | 2,750 | 3-45 | 1,740 | 3-15 | 1,380 | 2-6 | 790 | | 320 |
| 31. | 5-65 | 5,070 | 3-85 | 2,260 | | | 3-25 | 1,500 | | | | 320 |

MONTHLY DISCHARGE of Incomappleux River, near Beaton, for 1914.

(Drainage area 460 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | Accuracy. |
| | | | | | | | |
| May | 4,710 | 2,470 | 3,480 | 7-56 | 8-72 | 214,000 | B |
| June | 7,560 | 3,100 | 5,040 | 10-9 | 12-2 | 300,000 | C |
| July | 8,630 | 3,030 | 5,840 | 12-7 | 14-6 | 359,000 | C |
| August | 5,340 | 2,260 | 3,470 | 7-54 | 8-69 | 213,000 | B |
| September | 2,960 | 1,090 | 1,890 | 4-10 | 4-57 | 112,000 | B |
| October | 2,260 | 890 | 1,360 | 2-96 | 3-41 | 85,600 | B |
| November | 1,740 | 790 | 1,060 | 2-30 | 2-57 | 63,100 | B |
| December | 690 | | 400 | 0-87 | 1-00 | 24,600 | |

KICKING HORSE RIVER NEAR GOLDEN (3011).

Location.—In NE. $\frac{1}{4}$, section 12, township 27, range 22, west 5th, on traffic bridge, in the town of Golden, Revelstoke district.

Records Available.—Open season, 1912, 1913, and 1914. Metering under ice conditions, February 22, 1912, 172 c.f.s. Metering under ice conditions February 28, 1914, 276 c.f.s.

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Climatic Conditions.—The precipitation at Golden, from December 1, 1913, to November 30, 1914, amounted to about 14 inches. This may be considered lighter than usual. The snowfall was 3 or 4 feet. The summers are hot and quite dry, while the winters are very severe, the temperature, some seasons, going down to -50° F. for a night. Frazil ice will be found in the Kicking Horse at this point, as well as practically up to its source.

Gauge.—A vertical staff gauge is used, and read two or three times daily by Mr. W. Wenman, of Golden.

Channel.—Straight for 200 yards above and below the station. Control is a sand bar about 100 yards down stream from section.

Discharge Measurements.—Ten were made in 1911-12, five in 1913, and six in 1914.

Accuracy.—The channel has shifted slightly since 1913, and a new curve was plotted for 1914. The measurements are accurate, the curve only fair, and the gauge readings are very reliable. The results should be within 10 per cent.

DISCHARGE MEASUREMENTS of Kicking Horse River, near Golden, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|-----------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| Feb. 28..... | C. E. Webb..... | 1,048 | 126 | 283.6 | 0.98 | ..... | 2,780 ¹ |
| June 11..... | J. A. E..... | 1,909 | 180 | 644.0 | 5.51 | 4.25 | 3,550 |
| July 28..... | "..... | 1,909 | 155 | 605.0 | 5.12 | 4.10 | 3,100 |
| Aug. 6..... | "..... | 1,909 | 155 | 692.0 | 5.94 | 4.50 | 4,110 |
| Sept. 11..... | "..... | 1,927 | 98 | 391.0 | 3.30 | 2.9 | 1,290 |
| Oct. 14..... | C. E. R..... | 1,929 | 81 | 329.0 | 2.77 | 2.32 | 912 |

¹Not very reliable. Frazil ice.

DAILY GAUGE HEIGHT AND DISCHARGE OF Kicking Horse River, near Golden,
for 1914.

| Day. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 2-58 | 1,040 | 4-15 | 3,350 |
| 2 | | | 2-85 | 1,280 | 4-70 | 4,630 |
| 3 | | | 3-2 | 1,660 | 5-50 | 6,620 |
| 4 | | | 2-95 | 1,380 | 5-85 | 7,570 |
| 5 | | | 2-75 | 1,200 | 5-25 | 5,990 |
| 6 | | | 2-65 | 1,100 | 4-85 | 4,990 |
| 7 | | | 2-6 | 1,060 | 4-50 | 4,150 |
| 8 | | | 2-65 | 1,100 | 4-30 | 3,680 |
| 9 | | | 2-95 | 1,380 | 4-20 | 3,460 |
| 10 | | | 3-07 | 1,510 | 4-15 | 3,350 |
| 11 | | | 3-17 | 1,620 | 4-30 | 3,680 |
| 12 | | | 3-2 | 1,660 | 4-60 | 4,390 |
| 13 | | | 3-4 | 1,950 | 4-90 | 5,110 |
| 14 | | | 3-65 | 2,300 | 5-25 | 5,990 |
| 15 | | | 4-0 | 3,030 | 5-55 | 6,750 |
| 16 | 1-9 | 550 | 4-2 | 3,460 | 5-85 | 7,570 |
| 17 | 1-92 | 563 | 4-15 | 3,350 | 6-17 | 8,510 |
| 18 | 1-78 | 474 | 4-02 | 3,070 | 6-05 | 8,150 |
| 19 | 1-95 | 582 | 3-83 | 2,690 | 5-9 | 7,710 |
| 20 | 2-05 | 648 | 3-8 | 2,630 | 5-45 | 6,500 |
| 21 | 1-9 | 550 | 3-67 | 2,390 | 5-0 | 5,350 |
| 22 | 2-02 | 628 | 3-75 | 2,540 | 4-7 | 4,630 |
| 23 | 1-91 | 556 | 4-05 | 3,130 | 4-25 | 3,570 |
| 24 | 2-1 | 680 | 4-25 | 3,570 | 4-0 | 3,030 |
| 25 | 2-02 | 628 | 4-35 | 3,800 | 4-15 | 3,350 |
| 26 | 2-0 | 615 | 4-1 | 3,240 | 4-57 | 4,330 |
| 27 | 2-0 | 615 | 3-85 | 2,720 | 4-4 | 3,910 |
| 28 | 2-0 | 615 | 3-7 | 2,440 | 4-52 | 4,200 |
| 29 | 2-08 | 667 | 3-6 | 2,270 | 4-65 | 4,510 |
| 30 | 2-21 | 762 | 3-4 | 1,950 | 4-90 | 5,110 |
| 31 | | | 3-65 | 2,360 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Golden, for 1914—*Concluded.*

| Day. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5.3 | 6,120 | 4.61 | 4,410 | 3.65 | 2,360 | 3.08 | 1,520 | 2.0 | 615 | 1.60 | 370 |
| 2 | 5.67 | 7,070 | 4.61 | 4,410 | 3.70 | 2,440 | 3.05 | 1,480 | 2.05 | 617 | 1.60 | 370 |
| 3 | 5.8 | 7,430 | 4.75 | 4,750 | 3.70 | 2,440 | 2.90 | 1,330 | 2.0 | 615 | 1.80 | 455 |
| 4 | 5.97 | 7,910 | 4.55 | 4,270 | 3.80 | 2,630 | 2.90 | 1,330 | 2.0 | 615 | 1.68 | 418 |
| 5 | 5.9 | 7,710 | 4.35 | 3,800 | 3.60 | 2,270 | 2.79 | 1,230 | 2.0 | 615 | 1.52 | 330 |
| 6 | 5.9 | 7,710 | 4.5 | 4,150 | 3.20 | 1,660 | 2.60 | 1,060 | 1.95 | 582 | 1.62 | 382 |
| 7 | 5.7 | 7,150 | 4.55 | 4,270 | 3.37 | 1,900 | 2.60 | 1,060 | 1.9 | 550 | 1.56 | 350 |
| 8 | 5.4 | 6,370 | 3.97 | 2,970 | 3.51 | 2,120 | 2.50 | 980 | 1.87 | 530 | 1.4 | 280 |
| 9 | 5.3 | 6,120 | 3.75 | 2,540 | 3.15 | 1,600 | 2.75 | 1,200 | 1.9 | 550 | Ice. | 250 |
| 10 | 5.2 | 5,860 | 3.57 | 2,220 | 2.80 | 1,240 | 2.70 | 1,150 | 1.85 | 517 | | 230 |
| 11 | 5.35 | 6,240 | 3.6 | 2,270 | 2.80 | 1,240 | 2.5 | 980 | 1.85 | 517 | | 210 |
| 12 | 5.35 | 6,240 | 3.82 | 2,670 | 2.77 | 1,210 | 2.52 | 996 | 1.85 | 517 | | 200 |
| 13 | 5.75 | 7,290 | 4.02 | 3,070 | 2.57 | 1,040 | 2.4 | 900 | 1.8 | 483 | | 200 |
| 14 | 5.67 | 7,070 | 4.2 | 3,460 | 2.50 | 980 | 2.35 | 865 | 1.72 | 441 | | 200 |
| 15 | 5.65 | 7,020 | 3.9 | 2,820 | 2.45 | 940 | 2.35 | 865 | 1.45 | 300 | | 200 |
| 16 | 5.07 | 5,520 | 3.94 | 2,900 | 2.40 | 900 | 2.35 | 865 | 1.14 | 185 | | 200 |
| 17 | 4.85 | 4,990 | 3.96 | 2,950 | 2.30 | 830 | 2.35 | 865 | 1.35 | 260 | | 200 |
| 18 | 4.95 | 5,230 | 3.9 | 2,820 | 2.45 | 940 | 2.35 | 865 | 1.5 | 320 | | 200 |
| 19 | 4.89 | 5,090 | 3.8 | 2,630 | 3.35 | 1,880 | 2.35 | 865 | 1.5 | 320 | | 200 |
| 20 | 5.2 | 5,860 | 4.1 | 3,240 | 2.85 | 1,280 | 2.35 | 865 | 1.5 | 320 | | 200 |
| 21 | 4.78 | 4,820 | 4.14 | 3,330 | 2.45 | 940 | 2.31 | 837 | 1.6 | 370 | | 200 |
| 22 | 4.27 | 3,610 | 4.27 | 3,610 | 2.50 | 980 | 2.10 | 680 | 1.75 | 458 | | 200 |
| 23 | 4.05 | 3,140 | 4.00 | 3,030 | 2.50 | 980 | 2.10 | 680 | 1.75 | 458 | | 200 |
| 24 | 4.25 | 3,570 | 3.75 | 2,540 | 2.52 | 996 | 2.07 | 660 | 1.75 | 458 | | 200 |
| 25 | 4.27 | 3,610 | 3.50 | 2,100 | 2.70 | 1,150 | 2.02 | 628 | 1.67 | 412 | | 200 |
| 26 | 4.1 | 3,240 | 3.75 | 2,540 | 3.05 | 1,480 | 2.0 | 615 | 1.65 | 400 | | 200 |
| 27 | 4.02 | 3,070 | 3.94 | 2,900 | 3.60 | 2,270 | 2.0 | 615 | 1.65 | 400 | | 200 |
| 28 | 4.02 | 3,070 | 3.88 | 2,780 | 3.25 | 1,730 | 1.95 | 582 | 1.65 | 400 | | 200 |
| 29 | 4.27 | 3,610 | 4.00 | 3,030 | 3.20 | 1,660 | 1.94 | 576 | 1.62 | 382 | | 200 |
| 30 | 4.25 | 3,570 | 3.88 | 2,780 | 2.95 | 1,380 | 1.92 | 563 | 1.62 | 382 | | 200 |
| 31 | 4.46 | 4,110 | 3.75 | 2,540 | | | 2.0 | 615 | | | | 200 |

MONTHLY DISCHARGE of Kicking Horse River, near Golden, for 1914.

(Drainage area, 700 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | |
|-----------|---------------------------|----------|-------|-----------------|----------------------------------|--------------------|---------|
| | Maximum. | Minimum. | Mean. | Per Square Mile | Depth in inches on Drainage Area | Total in Acre-feet | |
| | | | | | | | |
| May | | 3,800 | 1,040 | 2,220 | 3.17 | 3.66 | 136,000 |
| June | | 8,510 | 3,030 | 5,140 | 7.34 | 8.19 | 306,000 |
| July | | 7,910 | 3,070 | 5,460 | 7.80 | 8.99 | 336,000 |
| August | | 4,750 | 2,100 | 3,160 | 4.51 | 5.20 | 194,000 |
| September | | 2,630 | 830 | 1,480 | 2.11 | 2.35 | 88,100 |
| October | | 1,520 | 563 | 914 | 1.30 | 1.50 | 56,200 |
| November | | 647 | 185 | 454 | 0.65 | 0.72 | 27,000 |
| December | | 485 | | 248 | 0.35 | 0.40 | 15,200 |

Accuracy "B".

KICKING HORSE RIVER, NEAR FIELD (3012).

Location.—In township 28, range 18, west 5th, below the mouth of Yoho river, on the first traffic bridge, $3\frac{1}{4}$ miles east of Field. Revelstoke district.

Records Available.—June to November, 1912 and 1913; June to December, 1914.

Climatic Conditions.—The precipitation at Field is considerably greater than at Golden, (see Kicking Horse, near Golden), but much less than at Glacier, (see Illecillewaet river, near Glacier). The summers are short, with some very hot days, and nights generally cool. The rainfall in the summer months varies greatly, but is generally much less in July and August than in June. The winters are cold, with occasional severe storms, as low as 50°F. some seasons. The river near Field is generally frozen for three or four months, and frazil ice is always to be contended with.

Gauge.—A chain gauge is used, and read three times a week by Mr. Alex. Stuart, of Field.

Channel.—The channel is straight for 50 yards above and below the station, the water is very swift during freshet, the control is fairly permanent, but shifted slightly in 1914.

Discharge Measurements.—Eight well-distributed measurements in 1912, eight in 1913, and five in 1914, were made from the traffic bridge above-mentioned.

Accuracy.—A slight shift in the channel was noted, but the 1912 curve was still used. The gauge is read only two or three times a week, and during the summer the data cannot be guaranteed within 20 per cent. Later in the fall the results should be within 15 per cent.

DISCHARGE MEASUREMENTS of Kicking Horse River, near Field, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------------|------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 14 | J. A. E. | 1,909 | 72 | 218 | 6.41 | 5.6 | 1,410 |
| Sept. 21 | C. E. R. | 1,927 | 55 | 116 | 2.35 | 4.10 | 272 |
| Oct. 16 | J. A. E. | 1,909 | 52 | 103 | 1.93 | 3.65 | 199 |
| Sept. 12 | " | 1,927 | 60 | 137 | 2.84 | 4.3 | 390 |
| July 29 | " | 1,909 | 75 | 227 | 6.49 | 5.5 | 1,470 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Field,
for 1914.

| DAY. | June. | |
|------|---------------|------------|
| | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. |
| 1 | | 1,820 |
| 2 | | 1,880 |
| 3 | | 1,940 |
| 4 | 6-0 | 1,940 |
| 5 | 6-10 | 2,100 |
| 6 | | |
| 7 | 6-0 | 1,940 |
| 8 | | 1,880 |
| 9 | | 1,820 |
| 10 | | 1,760 |
| 11 | | 1,700 |
| 12 | | 1,650 |
| 13 | | 1,590 |
| 14 | | 1,530 |
| 15 | 5-7 | 1,470 |
| 16 | | 1,745 |
| 17 | 6-15 | 2,180 |
| 18 | | 2,120 |
| 19 | | 2,080 |
| 20 | 6-05 | 2,020 |
| 21 | | 1,510 |
| 22 | 5-45 | y |
| 23 | | 1,110 |
| 24 | 4-9 | 838 |
| 25 | | 560 |
| 26 | | 580 |
| 27 | | 600 |
| 28 | 5-0 | 625 |
| 29 | | 668 |
| 30 | 5-1 | 710 |
| 31 | 5-7 | 1,090 |
| | | 1,470 |

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near Field,
for 1914—(Con.)

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | 1,860 | | 2,530 | 5-50 | 1,180 | | 260 | 3-4 | 140 | 3-1 | 110 |
| 2. | 6-2 | 2,260 | 6-45 | 2,660 | 5-50 | 1,180 | | 245 | | 135 | | 110 |
| 3. | 6-55 | 2,840 | 6-2 | 2,260 | 5-55 | 1,250 | | 230 | 3-3 | 130 | 3-1 | 110 |
| 4. | 6-6 | 2,920 | 6-3 | 2,420 | 5-50 | 1,180 | 2-90 | 215 | | 130 | | 110 |
| 5. | 6-45 | 2,660 | | 2,260 | | 1,020 | 3-90 | 215 | 3-3 | 130 | | 110 |
| 6. | 6-5 | 2,750 | 6-1 | 2,100 | 5-25 | 862 | | 215 | 3-3 | 130 | | 110 |
| 7. | 6-55 | 2,840 | 5-9 | 1,780 | 5-45 | 1,110 | 3-90 | 215 | | 130 | | 110 |
| 8. | 6-25 | 2,340 | | 1,352 | | 770 | 4-20 | 275 | 3-3 | 130 | | 110 |
| 9. | 6-25 | 2,340 | 5-3 | 925 | 4-65 | 425 | 4-15 | 265 | | 130 | | 110 |
| 10. | 6-3 | 2,420 | | 1,050 | 4-45 | 345 | | 240 | 3-3 | 130 | | 110 |
| 11. | | 2,700 | 5-5 | 1,180 | 4-40 | 330 | | | | 125 | | 110 |
| 12. | | 2,980 | 5-6 | 1,320 | | 292 | 3-8 | 200 | 3-2 | 120 | | 110 |
| 13. | 6-8 | 3,260 | | 1,630 | 4-10 | 255 | 3-75 | 192 | 3-2 | 120 | | 110 |
| 14. | 6-8 | 3,260 | 6-0 | 1,940 | 4-55 | 380 | | 200 | | 130 | | 110 |
| 15. | 6-7 | 3,099 | | 1,700 | | 298 | 3-85 | 208 | | 139 | | 110 |
| 16. | | 2,680 | 5-7 | 1,470 | 3-90 | 215 | 3-8 | 200 | 3-45 | 148 | | 110 |
| 17. | 6-2 | 2,260 | 5-7 | 1,470 | 3-75 | 192 | | 192 | | 144 | | 110 |
| 18. | | 2,420 | 5-7 | 1,470 | 3-95 | 225 | 3-7 | 185 | 3-4 | 140 | | 110 |
| 19. | 6-4 | 2,580 | | 1,660 | | 220 | | 178 | | 135 | | 110 |
| 20. | 6-4 | 2,580 | 5-95 | 1,860 | | 214 | 3-6 | 170 | 3-3 | 130 | | 110 |
| 21. | | 1,950 | 5-9 | 1,780 | 3-85 | 208 | | 159 | | 125 | | 110 |
| 22. | 5-6 | 1,320 | | 1,620 | 3-80 | 200 | 3-45 | 148 | 3-2 | 120 | | 110 |
| 23. | 5-4 | 1,050 | 5-7 | 1,470 | 3-80 | 200 | 3-45 | 148 | | 115 | | 110 |
| 24. | 5-6 | 1,320 | 5-45 | 1,110 | 4-00 | 235 | | 148 | 3-1 | 110 | | 110 |
| 25. | | 1,250 | 5-55 | 1,250 | 4-20 | 275 | 3-45 | 148 | | 110 | | 110 |
| 26. | 5-5 | 1,180 | | 1,350 | | 290 | 3-40 | 140 | 3-1 | 110 | 3-1 | 110 |
| 27. | 5-5 | 1,180 | | 1,450 | | 300 | | 135 | | 110 | 3-0 | 100 |
| 28. | 5-5 | 1,180 | 5-75 | 1,550 | 4-35 | 315 | | 130 | 3-1 | 110 | | 100 |
| 29. | 5-8 | 1,620 | | 1,450 | 4-30 | 300 | 3-25 | 125 | | 110 | 3-0 | 100 |
| 30. | 6-2 | 2,260 | | 1,360 | 4-20 | 275 | 3-35 | 135 | | 110 | | 100 |
| 31. | | 2,400 | | 1,270 | | | | 138 | | | | 100 |

MONTHLY DISCHARGE of Kicking Horse River at Field, for 1914.

(Drainage area, 130 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| June..... | 2,180 | 560 | 1,500 | 11.5 | 12.8 | 89,300 | |
| July..... | 3,260 | 1,050 | 2,250 | 17.3 | 19.9 | 138,000 | D |
| August..... | 2,660 | 925 | 1,770 | 13.6 | 15.7 | 109,000 | C |
| September..... | 1,250 | 192 | 485 | 3.73 | 4.16 | 28,900 | C |
| October..... | 275 | 125 | 196 | 1.51 | 1.74 | 12,100 | C |
| November..... | 148 | 110 | 126 | 0.97 | 1.08 | 7,500 | C |
| December..... | 110 | 100 | 108 | 0.83 | 0.96 | 6,640 | |

KICKING HORSE RIVER NEAR NO. 2 TUNNEL (3013).

Location.—In township 28, range 18, west 5th, above mouth of Yoho river, immediately above C.P.R. bridge over the Kicking Horse between Nos. 1 and 2 tunnels, 5 miles east of Field. Revelstoke district.

Records Available.—July to October, 1912; April, 1913, to December, 1914.

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Climatic Conditions.—Similar to Field, with possibly a little more snow.

Gauge.—An enamel iron vertical staff gauge is used, and read twice daily by Mr. C. E. Hamilton, of Field. This gauge is situated immediately above C.P.R. bridge, between Nos. 1 and 2 tunnels.

Channel.—Channel is straight for 25 yards above and below the section. The control is not permanent.

Discharge Measurements.—Twelve measurements were made in 1912-13, and six in 1914. A shift occurred in 1914 and a new curve was plotted.

Accuracy.—The measuring section at high water is not very satisfactory. The control below the gauge is not permanent. The results, though probably within 20 to 25 per cent, are not guaranteed.

DISCHARGE MEASUREMENTS of Kicking Horse River, near No. 2 Tunnel, near Field, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------|-----------|--------|------------------|----------------|---------------|-------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 14..... | J. A. E..... | 1,909 | 23 | 69 | 5.84 | 3.40 | ¹ 403 |
| July 29..... | "..... | 1,909 | 20 | 51.1 | 5.16 | 1.95 | ¹ 264 |
| Aug. 7..... | "..... | 1,909 | 18 | 57.8 | 5.16 | 2.15 | ¹ 300 |
| Sept. 21..... | C. E. R..... | 1,927 | 57 | 39.2 | 2.76 | 1.20 | ² 108 |
| " 12..... | J. A. E..... | 1,927 | 14 | 28.6 | 3.19 | 1.20 | ¹ 91.4 |
| Oct. 16..... | "..... | 1,909 | 14 | 27.2 | 3.08 | 0.95 | ¹ 83.8 |

¹From C. P. R. bridge.

²Wading, different section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse, River near No. 2 Tunnel, near Field, B.C., for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|-------------|--------------|-------------|---------------|------------|---------------|------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. | Gauge Height | Dis-charge. | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.4 | 90 | 2.25 | 216 |
| 2 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.4 | 90 | 2.55 | 266 |
| 2. | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | | 103 | 3.50 | 440 |
| 4 | 0.8 | 23 | 0.8 | 24 | 0.7 | 15 | 0.7 | 15 | 1.6 | 116 | 3.65 | 469 |
| 5 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.5 | 103 | 3.10 | 365 |
| 6 | 0.8 | 23 | 0.8 | 21 | 0.7 | 15 | 0.7 | 15 | 1.5 | 103 | 2.8 | (2) 275 |
| 7 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.4 | 90 | 2.60 | 275 |
| 8 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.5 | 103 | 2.40 | 241 |
| 9 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.6 | 116 | 2.30 | 224 |
| 10 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.75 | 19 | 1.6 | 116 | 2.20 | 207 |
| 11 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.8 | 23 | 1.7 | 130 | 2.30 | 224 |
| 12 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.8 | 23 | 1.7 | 130 | 2.55 | 266 |
| 13 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.8 | 21 | 1.8 | 145 | 2.95 | 338 |
| 14 | 0.8 | 23 | 0.8 | 23 | 0.7 | 15 | 0.8 | 21 | 1.95 | 168 | 3.45 | 430 |
| 15 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.8 | 23 | 2.1 | 191 | 3.85 | 508 |
| 16 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.8 | 23 | 2.2 | 207 | 3.95 | 528 |
| 17 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.85 | 28 | 2.2 | 207 | 4.00 | 537 |
| 18 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.9 | 32 | 2.1 | 191 | 3.50 | 440 |
| 19 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.9 | 32 | 2.0 | 175 | 3.30 | 403 |
| 20 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.9 | 32 | 2.0 | 175 | 2.90 | 329 |
| 21 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.9 | 32 | 1.9 | 160 | 2.55 | 266 |
| 22 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.9 | 32 | 1.95 | 168 | 2.25 | 216 |
| 23 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.9 | 32 | 2.15 | 199 | 2.0 | 175 |
| 24 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 0.9 | 32 | 2.25 | 216 | 1.8 | 145 |
| 25 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.0 | 42 | 2.4 | 241 | 1.9 | 160 |
| 26 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.0 | 42 | 2.3 | 224 | 2.05 | 183 |
| 27 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.1 | 53 | 2.1 | 191 | 2.05 | 183 |
| 28 | 0.8 | 23 | 0.7 | 15 | 0.7 | 15 | 1.1 | 53 | 1.95 | 168 | 2.1 | 191 |
| 29 | 0.8 | 23 | ..... | ..... | 0.7 | 15 | 1.15 | 59 | 1.8 | 145 | 2.3 | 224 |
| 30 | 0.8 | 23 | ..... | ..... | 0.7 | 15 | 1.3 | 77 | 1.75 | 138 | 2.65 | 284 |
| 31 | 0.8 | 23 | ..... | ..... | 0.7 | 15 | ..... | ..... | 1.85 | 152 | ..... | ..... |

SESSIONAL PAPER No. 25e

DAILY GAUGE HEIGHT AND DISCHARGE of Kicking Horse River, near No. 2 Tunnel, Field, B.C., for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 3-05 | 356 | 2-25 | 328 | 1-55 | 166 | 1-40 | 138 | 0-7 | 40 | 0-6 | |
| 2 | 3-3 | 403 | 2-35 | 356 | 1-45 | 147 | 1-40 | 138 | 0-7 | 40 | 0-6 | 31 |
| 3 | 3-5 | 440 | 2-35 | 356 | 1-45 | 147 | 1-30 | 121 | 0-7 | 49 | 0-6 | 31 |
| 4 | 3-5 | 440 | 2-4 | 367 | 1-45 | 147 | 1-30 | 121 | 0-7 | 40 | 0-6 | 31 |
| 5 | 3-25 | 394 | 2-1 | 290 | 1-45 | 147 | 1-20 | 105 | 0-7 | 40 | 0-6 | 31 |
| 6 | 3-2 | 384 | 2-1 | 290 | 1-30 | 121 | 1-20 | 105 | 0-7 | 49 | 0-6 | 31 |
| 7 | 3-1 | 365 | 2-15 | 362 | 1-30 | 121 | 1-15 | 98 | 0-6 | 31 | 0-6 | 31 |
| 8 | 2-9 | 329 | 1-65 | 254 | 1-30 | 121 | 1-25 | 113 | 0-6 | 31 | 0-6 | 31 |
| 9 | 2-85 | 320 | 1-7 | 197 | 1-30 | 121 | 1-30 | 121 | 0-6 | 31 | 0-6 | 31 |
| 10 | 3-05 | 356 | 1-55 | 166 | 1-20 | 105 | 1-25 | 113 | 0-6 | 31 | 0-6 | 31 |
| 11 | 3-05 | 356 | 1-6 | 176 | 1-25 | 113 | 1-1 | 90 | 0-6 | 31 | 0-6 | 31 |
| 12 | 3-2 | 384 | 1-6 | 176 | 1-20 | 105 | 1-1 | 90 | 0-6 | 31 | 0-6 | 31 |
| 13 | 3-4 | 421 | 1-7 | 197 | 1-10 | 90 | 1-1 | 90 | 0-6 | 31 | 0-6 | 31 |
| 14 | 3-35 | 412 | 1-8 | 219 | 1-10 | 90 | 1-0 | 76 | 0-6 | 31 | 0-6 | 31 |
| 15 | 3-35 | 412 | 1-8 | 219 | 1-00 | 76 | 1-0 | 76 | 0-6 | 31 | 0-6 | 31 |
| 16 | 2-75 | 302 | 1-75 | 208 | 1-00 | 76 | 1-0 | 76 | 0-6 | 31 | 0-6 | 31 |
| 17 | 2-45 | 250 | 1-75 | 208 | 0-90 | 63 | 1-0 | 76 | 0-6 | 31 | 0-6 | 31 |
| 18 | 2-45 | 250 | 1-75 | 208 | 0-90 | 63 | 1-0 | 76 | 0-6 | 31 | 0-6 | 31 |
| 19 | 2-65 | 284 | 1-75 | 208 | 1-20 | 105 | 1-0 | 76 | 0-6 | 31 | 0-6 | 31 |
| 20 | 3-00 | 347 | 1-85 | 230 | 1-25 | 113 | 0-9 | 63 | 0-6 | 31 | 0-5 | 24 |
| 21 | 2-40 | 367 | 1-9 | 242 | 1-25 | 113 | 0-9 | 63 | 0-6 | 31 | 0-5 | 24 |
| 22 | 2-65 | 278 | 2-1 | 290 | 1-20 | 105 | 0-8 | 51 | 0-6 | 31 | 0-4 | 19 |
| 23 | 1-85 | 230 | 1-9 | 242 | 1-15 | 98 | 0-8 | 51 | 0-6 | 31 | 0-4 | 19 |
| 24 | 1-90 | 242 | 1-75 | 208 | 1-30 | 121 | 0-8 | 51 | 0-6 | 31 | 0-4 | 19 |
| 25 | 2-00 | 265 | 1-7 | 197 | 1-30 | 121 | 0-8 | 51 | 0-6 | 31 | 0-4 | 19 |
| 26 | 1-95 | 254 | 1-7 | 197 | 1-45 | 147 | 0-8 | 51 | 0-6 | 31 | 0-4 | 19 |
| 27 | 1-85 | 230 | 1-7 | 197 | 1-85 | 230 | 0-8 | 51 | 0-6 | 31 | 0-4 | 19 |
| 28 | 1-9 | 242 | 1-7 | 197 | 1-65 | 186 | 0-7 | 40 | 0-6 | 31 | 0-4 | 19 |
| 29 | 1-95 | 254 | 1-7 | 197 | 1-45 | 147 | 0-7 | 40 | 0-6 | 31 | 0-4 | 19 |
| 30 | 1-95 | 254 | 1-70 | 197 | 1-40 | 138 | 0-7 | 40 | 0-6 | 31 | 0-4 | 19 |
| 31 | 2-25 | 328 | 1-65 | 186 | | | 0-7 | 40 | | | 0-4 | 19 |

MONTHLY DISCHARGE of Kicking Horse River, near Field, B.C., for 1914.

(Drainage area, 50 square miles.) No. 2 Tunnel.

| MONTH. | DISCHARGE IN SECOND-FEET | | | | RUN-OFF | |
|-----------|--------------------------|----------|-------|-----------------|----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area | Total in acre-feet |
| January | 23 | 23 | 23-0 | 0-46 | 0-53 | 1,410 |
| February | 23 | 15 | 19-0 | 0-38 | 0-40 | 1,060 |
| March | 15 | 15 | 15-0 | 0-30 | 0-35 | 922 |
| April | 77 | 15 | 29-0 | 0-58 | 0-65 | 1,730 |
| May | 244 | 99 | 153-0 | 3-06 | 3-54 | 9,410 |
| June | 537 | 145 | 302 | 6-04 | 6-74 | 18,080 |
| July | 416 | 230 | 328 | 6-56 | 7-56 | 20,200 |
| August | 367 | 166 | 236 | 4-72 | 5-44 | 14,500 |
| September | 230 | 63 | 121 | 2-42 | 2-70 | 7,280 |
| October | 138 | 40 | 83-5 | 1-67 | 1-92 | 5,130 |
| November | 40 | 31 | 32-8 | 0-66 | 0-74 | 1,950 |
| December | 31 | 19 | 26-7 | 0-53 | 0-61 | 1,640 |

NO. 2 CREEK, NEAR FORSTER'S LANDING (3015).

Location.—No. 2 creek flows easterly into Columbia river from the Selkirk range, about 6 miles from Wilmer. The gauging station is located about 1 mile from the mouth, on the highway bridge on road from Wilmer to Forster's Landing.

Records Available.—June to October, 1912; May to October, 1913; April to November, 1914.

Climatic Conditions.—The precipitation at the mouth is similar to that at Wilmer, which from December 1, 1913, to November 30, 1914, was 15.5 inches. The summers are hot, cool nights, and very dry, almost semi-arid. The winters are about four and one-half months long, and, at times, very severe. In 1911 the temperature was as low as -33°F . Frazil ice is prevalent.

Gauge.—A staff gauge is used, and read by Mrs. Colin Mackay of Morinish Ranch, Wilmer.

Channel.—Not satisfactory. Water swift and broken. A new station has been established at the bridge on the upper road which will be used in 1915.

Discharge Measurements.—Four measurements were made in 1914, and thirteen in 1912 and 1913.

Accuracy.—Due to the poor section the measurements are not guaranteed.

DISCHARGE MEASUREMENTS of No. 2 Creeks, near Forsters' Landing, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|---------------|-----------|--------|------------------|----------------|---------------|------------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 4 | D. O. B. G. | 1,048 | 35 | 69.8 | 5.25 | 0.25 | 366 |
| June 19 | J. A. E. | 1,909 | 86.5 | 240 | 7.29 | 2.25 | 1,750 |
| Aug 2 | " | 1,939 | 91.0 | 170 | 5.86 | 1.70 | 997 |
| Oct. 22 | " | 1,939 | 33.0 | 79.2 | 2.07 | 1.0 | 164 ¹ |

¹New section.

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DAILY GAUGE HEIGHT AND DISCHARGE at No. 2 Creek, near Forster's Landing,
for 1914.

| DAY. | April. | | May. | | June. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 0-0 | 216 | 0-8 | 530 |
| 2..... | | | 0-1 | 252 | 1-0 | 620 |
| 3..... | | | 0-3 | 328 | 1-6 | 967 |
| 4..... | | | 0-2 | 290 | 2-0 | 1,380 |
| 5..... | | | 0-2 | 290 | 1-5 | 895 |
| 6..... | | | 0-1 | 252 | | 760 |
| 7..... | | | 0-2 | 290 | 1-0 | 620 |
| 8..... | | | 0-1 | 252 | -9 | 574 |
| 9..... | | | 0-3 | 328 | -8 | 530 |
| 10..... | | | 0-3 | 328 | -9 | 574 |
| 11..... | | | 0-4 | 367 | 1-1 | 667 |
| 12..... | | | 0-4 | 367 | 1-1 | 667 |
| 13..... | | | 0-5 | 407 | 1-3 | 774 |
| 14..... | | | 0-5 | 407 | 1-5 | 895 |
| 15..... | | | 0-7 | 488 | 1-9 | 1,260 |
| 16..... | | | 0-9 | 574 | 2-1 | 1,520 |
| 17..... | -0-2 | 145 | 0-8 | 530 | 2-4 | 1,980 |
| 18..... | -0-2 | 145 | 0-7 | 488 | 2-4 | 1,980 |
| 19..... | -0-2 | 145 | 0-7 | 488 | 2-0 | 1,380 |
| 20..... | -0-0 | 216 | 0-6 | 447 | 1-8 | 1,160 |
| 21..... | -0-1 | 180 | 0-6 | 447 | 1-6 | 967 |
| 22..... | -0-1 | 180 | 0-7 | 488 | 1-3 | 774 |
| 23..... | -0-1 | 180 | 0-7 | 488 | 1-1 | 667 |
| 24..... | -0-1 | 180 | 0-9 | 574 | 1-0 | 620 |
| 25..... | -0-1 | 180 | 1-0 | 620 | 1-3 | 774 |
| 26..... | -0-1 | 180 | 0-9 | 574 | 1-3 | 774 |
| 27..... | -0-1 | 180 | 0-7 | 488 | 1-3 | 774 |
| 28..... | -0-1 | 180 | 0-6 | 447 | 1-5 | 895 |
| 29..... | 0-0 | 216 | 0-5 | 407 | 1-6 | 967 |
| 30..... | 0-0 | 216 | 0-4 | 367 | 1-6 | 967 |
| 31..... | | | 0-6 | 447 | | |

DAILY GAUGE HEIGHT AND DISCHARGE at No. 2 Creek, near Foster's Landing, for 1914.—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-7 | 1,060 | 1-7 | 1,060 | 0-7 | 488 | 0-3 | 328 | 0-1 | 252 | | |
| 2 | 2-0 | 1,380 | 1-7 | 1,060 | 0-7 | 488 | 0-25 | 309 | 0-2 | 296 | | |
| 3 | 2-3 | 1,820 | 1-8 | 1,160 | 0-8 | 530 | 0-2 | 290 | | 290 | | |
| 4 | 2-7 | 2,500 | 1-8 | 1,160 | 0-9 | 574 | | 290 | 0-2 | 296 | | |
| 5 | 2-75 | 2,590 | 1-5 | 895 | 0-8 | 530 | | 290 | | 270 | | |
| 6 | 3-0 | 3,049 | 1-4 | 830 | 0-6 | 447 | 0-2 | 290 | 0-1 | 252 | | |
| 7 | 2-4 | 1,980 | 1-9 | 1,260 | 0-7 | 488 | 0-2 | 290 | 0-1 | 252 | | |
| 8 | 2-2 | 1,670 | 1-3 | 774 | 0-8 | 530 | | 290 | 0-1 | 252 | | |
| 9 | 2-2 | 1,670 | 1-0 | 620 | 0-5 | 467 | | 290 | 0-0 | 216 | | |
| 10 | 2-1 | 1,520 | 1-0 | 620 | 0-5 | 467 | | 290 | | 216 | | |
| 11 | 2-1 | 1,520 | 1-1 | 667 | 0-5 | 407 | 0-2 | 290 | | 216 | | |
| 12 | 2-4 | 1,980 | 1-2 | 720 | 0-4 | 387 | 0-1 | 252 | 0-0 | 216 | | |
| 13 | 2-8 | 2,680 | 1-1 | 667 | 0-5 | 407 | 0-2 | 290 | | 216 | | |
| 14 | 2-9 | 2,860 | 1-1 | 667 | 0-3 | 328 | 0-2 | 290 | | 216 | | |
| 15 | 3-1 | 3,220 | 1-1 | 667 | 0-3 | 328 | 0-1 | 252 | 0-0 | 216 | | |
| 16 | 2-1 | 1,520 | 1-2 | 720 | 0-2 | 290 | 0-2 | 290 | | 216 | | |
| 17 | 2-0 | 1,380 | 1-0 | 620 | 0-4 | 367 | 0-2 | 290 | 0-0 | 216 | | |
| 18 | 2-0 | 1,380 | 1-0 | 620 | 0-8 | 530 | 0-2 | 290 | 0-0 | 216 | | |
| 19 | 2-0 | 1,380 | 1-05 | 646 | 0-4 | 367 | 0-2 | 290 | | 200 | | |
| 20 | 2-1 | 1,520 | 1-1 | 667 | 0-3 | 328 | 0-2 | 290 | | 200 | | |
| 21 | 1-8 | 1,160 | 1-0 | 620 | 0-3 | 328 | 0-1 | 252 | | 190 | | |
| 22 | 1-4 | 830 | 1-1 | 667 | 0-3 | 328 | 0-1 | 252 | | 180 | | |
| 23 | 1-4 | 830 | 0-9 | 574 | 0-3 | 328 | 0-1 | 252 | | 170 | | |
| 24 | 1-5 | 895 | 0-9 | 574 | 0-5 | 467 | 0-1 | 252 | | 160 | | |
| 25 | 1-5 | 895 | 0-8 | 530 | 0-5 | 467 | 0-1 | 252 | | 150 | | |
| 26 | 1-4 | 830 | 0-95 | 597 | 0-5 | 467 | 0-1 | 252 | | 145 | | |
| 27 | 1-4 | 830 | 0-9 | 574 | 0-5 | 467 | 0-1 | 252 | | 145 | | |
| 28 | 1-5 | 895 | 1-1 | 667 | 0-5 | 467 | 0-1 | 252 | | 145 | | |
| 29 | 1-4 | 830 | 0-9 | 574 | 0-5 | 467 | 0-1 | 252 | | 145 | | |
| 30 | 1-4 | 830 | 1-0 | 620 | 0-3 | 328 | 0-1 | 252 | | 145 | | |
| 31 | 1-7 | 1,060 | 0-8 | 530 | | | 0-2 | 290 | | | | |

MONTHLY DISCHARGE of No. 2 Creek, near Forster's Landing, for 1914.

(Drainage area, 120 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| April | 216 | | 151 | 1-26 | 1-41 | 8,980 |
| May | 620 | 216 | 411 | 3-42 | 3-94 | 25,300 |
| June | 1,980 | 530 | 930 | 7-75 | 8-65 | 55,300 |
| July | 3,220 | 830 | 1,570 | 13-1 | 15-1 | 96,500 |
| August | 1,260 | 530 | 730 | 6-08 | 7-01 | 44,900 |
| September | 574 | 290 | 412 | 3-43 | 3-83 | 24,500 |
| October | 328 | 252 | 277 | 2-31 | 2-66 | 17,000 |
| November | 290 | | 206 | 1-72 | 1-92 | 12,300 |

SESSIONAL PAPER No. 25e

SINCLAIR CREEK, NEAR SINCLAIR (3034).

Location.—At highway bridge on Golden to Windermere road. About 1 mile from mouth. Revelstoke district.

Records Available.—July 20 to December 31, 1914.

Climatic Conditions.—Summer is hot, with cool nights. Slightly more precipitation than at Invermere. The winter is of about four and one-half month's duration. Minimum temperature is as low as -40°F . The creek seldom freezes over.

Gauge.—Vertical staff gauge, read by Mr. J. A. McCullough.

Channel.—Sandy and shifting. Several shifts occurred from April to July, 1914.

Discharge Measurements.—Eight measurements were made in 1914.

Co-operation.—This station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—Owing to serious shifts in the channel the data cannot be guaranteed.

General.—Sinclair creek rises in the westerly slope of the Rockies and flows through Sinclair pass to Columbia river, into which it empties about 12 miles below Windermere lake. About $2\frac{1}{2}$ miles above the mouth it receives the waters of the Sinclair Hot Springs, which have a warming influence upon it. The use of the water of Sinclair creek is practically confined to irrigation. The drainage area is 30 square miles.

DISCHARGE MEASUREMENTS of Sinclair Creek, near Sinclair, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------|------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| April 18 | O. J. B. (Prov.) | | 16-0 | 16-90 | 1-72 | 1-02 | 29-00 |
| May 5 | D. O. B. G. | 1048 | 16-0 | 26-7 | 3-60 | 1-45 | 96-20 |
| May 25 | J. K. B. (Prov.) | | 16-0 | 27-54 | 4-93 | 1-70 | 135-80 |
| June 25 | J. A. E. | 1939 | 18-0 | 34-0 | 4-21 | 2-45 | 143-00 |
| July 21 | O. J. B. | | 16-0 | 21-37 | 2-42 | 1-90 | 51-50 |
| Aug. 3 | J. A. E. | 1969 | 16-0 | 18-90 | 2-07 | 1-80 | 30-30 |
| Aug. 24 | J. K. B. (Prov.) | | 16-0 | 16-72 | 1-80 | 1-62 | 30 10 |
| Sept. 21 | do do | | 16-7 | 17-84 | 2-04 | 1-74 | 36-40 |
| Sept 28 | O. J. B. (Prov.) | | 16-0 | 17-77 | 1-80 | 1-76 | 32-10 |

¹Marked shift in channel between April and July.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Sinclair Creek, near Sinclair, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1-8 | 40-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 |
| 2 | | | 1-7 | 33-2 | 1-6 | 27-0 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 3 | | | 1-8 | 40-0 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 4 | | | 1-8 | 40-0 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 5 | | | 1-8 | 40-0 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 6 | | | 1-7 | 33-2 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 7 | | | 1-8 | 40-0 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 8 | | | 1-8 | 40-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 9 | | | 1-7 | 33-2 | 1-6 | 27-0 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 10 | | | 1-7 | 33-2 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 11 | | | 1-7 | 33-2 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 12 | | | 1-7 | 33-2 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 13 | | | 1-7 | 33-2 | 1-5 | 21-3 | 1-7 | 33-2 | 1-67 | 31-5 | 1-5 | 21-3 |
| 14 | | | 1-7 | 33-2 | 1-5 | 21-3 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 |
| 15 | | | 1-7 | 33-2 | 1-5 | 21-3 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 |
| 16 | | | 1-7 | 33-2 | 1-6 | 27-0 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 |
| 17 | | | 1-6 | 27-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 |
| 18 | | | 1-6 | 27-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 |
| 19 | 2-0 | 55-8 | 1-6 | 27-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-60 | 27-0 | 1-4 | 16-6 |
| 20 | 2-0 | 55-8 | 1-6 | 27-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-60 | 27-0 | 1-4 | 16-6 |
| 21 | 2-0 | 55-8 | 1-6 | 27-0 | 1-7 | 33-2 | 1-7 | 33-2 | 1-60 | 27-0 | 1-4 | 16-6 |
| 22 | 2-0 | 55-8 | 1-6 | 27-0 | 1-7 | 33-2 | 1-7 | 33-2 | 1-6 | 27-0 | 1-4 | 16-6 |
| 23 | 2-0 | 55-8 | 1-6 | 27-0 | 1-7 | 33-2 | 1-7 | 33-2 | 1-6 | 27-0 | 1-4 | 16-6 |
| 24 | 2-0 | 55-8 | 1-6 | 27-0 | 1-7 | 33-2 | 1-65 | 30-1 | 1-6 | 27-0 | 1-4 | 16-6 |
| 25 | 2-0 | 55-8 | 1-6 | 27-0 | 1-8 | 40-0 | 1-65 | 30-1 | 1-6 | 27-0 | 1-4 | 16-6 |
| 26 | 1-9 | 47-5 | 1-6 | 27-0 | 1-8 | 40-0 | 1-65 | 30-1 | 1-6 | 27-0 | 1-4 | 16-6 |
| 27 | 1-9 | 47-5 | 1-6 | 27-0 | 1-8 | 40-0 | 1-65 | 30-1 | 1-6 | 27-0 | 1-4 | 16-6 |
| 28 | 1-8 | 40-0 | 1-6 | 27-0 | 1-75 | 36-6 | 1-65 | 30-1 | 1-5 | 21-3 | 1-4 | 16-6 |
| 29 | 1-8 | 40-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 | 1-4 | 16-6 |
| 30 | 1-8 | 40-0 | 1-6 | 27-0 | 1-7 | 33-2 | 1-65 | 30-1 | 1-5 | 21-3 | 1-4 | 16-6 |
| 31 | 1-8 | 40-0 | 1-6 | 27-0 | | | 1-65 | 30-1 | | | 1-4 | 16-6 |

MONTHLY DISCHARGE of Sinclair Creek, near Sinclair, for 1914.

(Drainage area, 30 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| August | 40 | 27 | 31-5 | 1-05 | 1-21 | 1,940 |
| September | 40 | 21-3 | 27-8 | 0-93 | 1-04 | 1,650 |
| October | 33-2 | 30-1 | 32-4 | 1-08 | 1-24 | 1,990 |
| November | 31-5 | 21-3 | 38-8 | 0-96 | 1-07 | 1,710 |
| December | 21-3 | 16-6 | 19-3 | 0-64 | 0-74 | 1,190 |

SPILLIMACHEEN RIVER, NEAR SPILLIMACHEEN (3019).

Location.—The station is located at highway bridge near mouth, about 4 miles from Spillimacheen. Revelstoke district.

Records Available.—June to October, 1912; June to November, 1913; April to December, 1914.

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Climatic Conditions.—The summer is generally hot and dry with cold nights. Winter is about four and a half months' duration, heavy snowfall and low temperatures (-40° F.). The river is generally frozen from November to April.

Gauge.—Vertical staff enamel gauge is used, and read two or three times a week by Mr. Jas. Montgomery.

Channel.—The channel is straight above and below the section for 50 yards. The control is a gravel bar, and there is a pronounced riffle at low water, 25 yards below the section.

Discharge Measurements.—Measurements are made from the downstream side of the highway bridge. In 1912, six measurements were made; in 1913, eight; and in 1914, three.

Accuracy.—Gauge readings are infrequent, the measuring section is good, there is a possibility of backwater from the Columbia at high water. These results should be within 10 per cent.

DISCHARGE MEASUREMENTS of Spillimacheen River near Spillimacheen Landing, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|---------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 17..... | J. A. E..... | 1909 | 135 | 670 | 8.88 | 3.3 | 5,920 |
| July 31..... | "..... | 1909 | 124 | 585 | 5.84 | 2.45 | 3,430 |
| Oct. 23..... | "..... | 1909 | 114 | 374 | 1.28 | 0.40 | 480 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Spillimacheen River, near Spillimacheen, for 1914.

| Day. | April. | | May. | | June. | |
|------|--------------|------------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge. | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | -0.2 | 200 | | 1,390 | 1.8 | 2,100 |
| 2 | -0.2 | 200 | | 2,100 | | 3,600 |
| 3 | -0.2 | 200 | 2.0 | 2,500 | 3.1 | 5,330 |
| 4 | -0.2 | 200 | | 2,100 | | 4,500 |
| 5 | -0.2 | 200 | | 1,450 | | 3,720 |
| 6 | | 200 | 1.4 | 1,450 | 2.2 | 2,980 |
| 7 | | 325 | | 1,590 | | 2,980 |
| 8 | 0.1 | 325 | | 1,750 | 2.2 | 2,980 |
| 9 | | 325 | 1.75 | 2,010 | | 2,860 |
| 10 | | 325 | 1.8 | 2,100 | 2.1 | 2,750 |
| 11 | 0.1 | 325 | | 2,100 | | 2,980 |
| 12 | 0.1 | 325 | | 2,200 | | 3,220 |
| 13 | | 375 | 1.85 | 2,200 | 2.4 | 3,480 |
| 14 | | 425 | | 2,300 | 2.9 | 4,780 |
| 15 | 0.4 | 500 | | 2,500 | | 5,330 |
| 16 | | 500 | 2.2 | 2,980 | | 5,330 |
| 17 | | 500 | 2.3 | 3,220 | 3.3 | 5,900 |
| 18 | 0.4 | 500 | | 2,980 | | 5,330 |
| 19 | 0.45 | 535 | | 2,500 | | 4,780 |
| 20 | | 575 | 1.9 | 2,300 | 2.7 | 4,240 |
| 21 | | 575 | | 2,500 | 2.8 | 4,500 |
| 22 | -0.55 | 615 | | 2,750 | | 3,980 |
| 23 | | 650 | 2.2 | 2,980 | | 3,480 |
| 24 | | 680 | 2.3 | 3,220 | 2.15 | 2,860 |
| 25 | 0.7 | 725 | | 2,980 | | 2,980 |
| 26 | 0.65 | 690 | | 2,750 | | 3,220 |
| 27 | | 690 | 2.0 | 2,500 | 2.4 | 3,480 |
| 28 | | 725 | | 2,500 | 2.45 | 3,630 |
| 29 | 0.7 | 725 | | 2,100 | | 3,720 |
| 30 | 0.9 | 905 | 1.8 | 2,100 | 2.6 | 3,980 |
| 31 | | | 1.9 | 2,300 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Spillimacheen River, near Spillimacheen, for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 4.640 | | 3.220 | | 1.640 | | 1.060 | 0.5 | 575 | | 375 |
| 2 | 3.1 | 5.330 | 2.4 | 3.480 | 1.50 | 1.590 | | 1.000 | | 550 | 0.2 | 375 |
| 3 | | 5.330 | | 3.220 | | 1.590 | 1.0 | 1.000 | | 525 | | 360 |
| 4 | 3.1 | 5.330 | | 2.980 | | 1.590 | 0.9 | 965 | 0.4 | 500 | | 340 |
| 5 | 3.2 | 5.620 | 2.0 | 2.500 | 1.50 | 1.590 | | 845 | | 475 | 0.1 | 325 |
| 6 | | 5.900 | | 2.500 | 1.40 | 1.450 | | 785 | | 450 | 0.0 | 275 |
| 7 | | 5.900 | | 2.750 | | 1.390 | 0.7 | 725 | 0.3 | 425 | | 275 |
| 8 | 3.3 | 5.900 | 2.1 | 2.750 | | 1.330 | | 700 | 0.3 | 425 | | 275 |
| 9 | | 5.900 | 1.8 | 2.100 | | 1.260 | | 675 | | 425 | 0.0 | 275 |
| 10 | | 5.620 | | 2.100 | 1.20 | 1.200 | 0.6 | 650 | | 425 | | 275 |
| 11 | | 5.620 | | 2.500 | | 1.150 | 0.55 | 612 | 0.3 | 425 | | 275 |
| 12 | 3.3 | 5.900 | 2.0 | 2.500 | 1.10 | 1.100 | | 575 | | 425 | 0.0 | 275 |
| 13 | | 5.900 | | 2.500 | 0.90 | 965 | | 537 | | 425 | 0.0 | 275 |
| 14 | | 5.620 | | 2.500 | | 820 | 0.4 | 500 | 0.3 | 425 | | 250 |
| 15 | 3.2 | 5.620 | 2.0 | 2.500 | | 735 | | 550 | 0.2 | 375 | | 250 |
| 16 | | 5.060 | 2.1 | 2.750 | 0.63 | 650 | | 600 | | 375 | | 250 |
| 17 | | 5.060 | | 2.750 | | 1,050 | 0.6 | 650 | | 375 | | 235 |
| 18 | 2.8 | 4.500 | | 2.750 | | 1,350 | 0.7 | 725 | 0.2 | 375 | | 235 |
| 19 | 2.9 | 4.780 | 2.1 | 2.750 | 1.60 | 1,750 | | 675 | | 355 | | 225 |
| 20 | | 4.240 | | 2.670 | 1.50 | 1,590 | | 625 | | 345 | | 225 |
| 21 | | 3.720 | | 2,580 | | 1,280 | 0.5 | 575 | 0.1 | 325 | | 250 |
| 22 | 2.2 | 2,930 | 2.0 | 2,500 | | 960 | | 525 | 0.1 | 325 | | 250 |
| 23 | | 3,220 | 1.75 | 2,610 | 0.60 | 650 | | 475 | | 360 | | 250 |
| 24 | | 3,480 | | 1,980 | | 830 | 0.3 | 425 | | 390 | | 250 |
| 25 | 2.5 | 3,720 | | 1,950 | | 1,020 | | 425 | 0.3 | 425 | | 250 |
| 26 | 2.3 | 3,220 | 1.75 | 1,920 | 1.20 | 1,200 | | 425 | | 415 | | 250 |
| 27 | | 3,220 | | 1,980 | 1.20 | 1,200 | 0.3 | 425 | | 410 | | 250 |
| 28 | | 2,980 | | 2,040 | | 1,130 | | 465 | 0.25 | 400 | | 250 |
| 29 | | 2,980 | 1.80 | 2,110 | | 1,070 | | 505 | 0.2 | 375 | | 250 |
| 30 | 2.2 | 2,980 | 1.6 | 1,750 | 1.0 | 1,600 | | 575 | | 375 | | 250 |
| 31 | | 2,990 | | 1,700 | | | 0.5 | 575 | | | | 250 |

MONTHLY DISCHARGE of Spillimacheen River at Spillimacheen, for 1914.

(Drainage area, 580 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| April | 0.5 | 200 | 408.0 | 0.81 | 0.90 | 27.800 | D |
| May | 3.220 | 1,390 | 2,340 | 4.03 | 4.65 | 144.800 | B |
| June | 5.900 | 2,100 | 3,830 | 6.61 | 7.88 | 228.000 | B |
| July | 5.900 | 2,080 | 4,020 | 7.97 | 9.11 | 284.000 | B |
| August | 3.480 | 1,700 | 2,460 | 4.24 | 4.80 | 131.000 | B |
| September | 1.750 | 630 | 1,200 | 2.08 | 2.32 | 71.400 | B |
| October | 1,000 | 425 | 645 | 1.09 | 1.20 | 39.000 | D |
| November | 575 | 325 | 410 | 0.72 | 0.80 | 24.800 | D |
| December | 375 | | 270 | 0.47 | 0.54 | 16.600 | |

TOBY CREEK, NEAR ATHALMER (3020).

Location.—One and one-half miles from Athalmer, 1 mile from mouth, on highway bridge on road from Athalmer to Wilmer.

Records Available.—June to September, 1912; May to October, 1913; April to November, 1914.

Climatic Conditions.—The climatic conditions at the mouth of Toby creek are similar to Invermere. The precipitation at Invermere from December 1, 1913, to November 30, 1914, was 13 inches. The summer days are hot and the evenings cool. The winters are about four months long, and at times very severe. The thermometer has gone as low as -40° F. Chinook winds occasionally strike the locality and a great change in temperature results. Toby creek remains frozen for about four months, and frazil ice is prevalent.

Gauge.—Vertical staff gauge is used and read daily by Mr. H. H. Peters, Cyderdale Ranch, Wilmer.

Channel.—The channel is straight above the section, but widens out below. Two channels are formed by a central pier in the bridge. The water is not at right angles to the bridge, and is swift.

Discharge Measurements.—Five measurements were made in 1912, nine in 1913, and three in 1914, from the highway bridge.

Accuracy.—Gauge readings are good, the measurements are not reliable, due to a possibility of backwater from the Columbia. Accuracy, 20 per cent.

DISCHARGE MEASUREMENTS of Toby Creek, near Athalmer, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------|----------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 5..... | D. O'B. G..... | 1048 | 160 | 316 | 2.00 | 1.20 | 631 |
| June 19..... | J. A. E..... | 1909 | 198 | 627 | 4.79 | 3.15 | 3,000 |
| Oct. 22..... | "..... | 1909 | 185 | 159 | 1.87 | 0.6 | 298 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Toby Creek, near Athalmer, for 1914.

| Day. | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 0.9 | 440 | 2.0 | 1,490 |
| 2 | | | 1.25 | 682 | 2.45 | 2,060 |
| 3 | | | 1.50 | 915 | 3.0 | 2,800 |
| 4 | | | 1.20 | 640 | 2.9 | 2,670 |
| 5 | | | 1.30 | 725 | 2.4 | 2,000 |
| 6 | | | 1.25 | 682 | 2.2 | 1,740 |
| 7 | | | 1.20 | 640 | 2.0 | 1,490 |
| 8 | | | 1.25 | 682 | 1.8 | 1,250 |
| 9 | | | 1.50 | 915 | 1.7 | 1,130 |
| 10 | | | 1.55 | 968 | 1.7 | 1,130 |
| 11 | | | 1.55 | 968 | 1.8 | 1,250 |
| 12 | | | 1.60 | 1,020 | 2.0 | 1,490 |
| 13 | | | 1.60 | 1,020 | 2.2 | 1,740 |
| 14 | | | 1.70 | 1,130 | 2.4 | 2,000 |
| 15 | | | 2.20 | 1,740 | 2.9 | 2,670 |
| 16 | 0.75 | 370 | 2.30 | 1,870 | 3.2 | 3,080 |
| 17 | 0.75 | 370 | 2.10 | 1,610 | 3.4 | 3,363 |
| 18 | 0.75 | 370 | 2.10 | 1,610 | 3.2 | 3,080 |
| 19 | 0.90 | 440 | 1.95 | 1,430 | 3.0 | 2,800 |
| 20 | 0.9 | 440 | 1.90 | 1,370 | 2.8 | 2,530 |
| 21 | 0.9 | 440 | 1.93 | 1,370 | 2.4 | 2,000 |
| 22 | 0.9 | 440 | 1.90 | 1,370 | 2.35 | 1,940 |
| 23 | 0.85 | 415 | 1.93 | 1,370 | 2.10 | 1,610 |
| 24 | 0.85 | 415 | 2.00 | 1,490 | 2.0 | 1,490 |
| 25 | 0.75 | 370 | 1.90 | 1,370 | 2.1 | 1,610 |
| 26 | 0.75 | 370 | 1.85 | 1,310 | 2.05 | 1,550 |
| 27 | 0.75 | 370 | 1.8 | 1,250 | 2.0 | 1,490 |
| 28 | 0.75 | 370 | 1.7 | 1,130 | 2.05 | 1,550 |
| 29 | 0.75 | 370 | 1.6 | 1,020 | 2.2 | 1,740 |
| 30 | 0.8 | 390 | 1.55 | 967 | 2.5 | 2,130 |
| 31 | | | 1.7 | 1,130 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Toby Creek, near Athalmer,
for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|----------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2-7 | 2,390 | 2-5 | 2,130 | 1-3 | 725 | 0-70 | 350 | 0-7 | 350 |
| 2 | 2-9 | 2,670 | 2-5 | 2,130 | 1-2 | 640 | 0-70 | 350 | 0-7 | 350 |
| 3 | 3-2 | 3,080 | 2-2 | 1,740 | 1-3 | 725 | 0-70 | 350 | 0-65 | 335 |
| 4 | 3-1 | 2,949 | 2-25 | 1,800 | 1-35 | 772 | 0-70 | 350 | 0-60 | 320 |
| 5 | 3-25 | 3,150 | 2-2 | 1,740 | 1-5 | 915 | 0-70 | 350 | 0-6 | 320 |
| 6 | 3-2 | 3,080 | 2-3 | 1,870 | 1-35 | 772 | 0-70 | 350 | 0-60 | 320 |
| 7 | 3-2 | 3,080 | 2-4 | 2,000 | 1-30 | 725 | 0-70 | 350 | 0-55 | 305 |
| 8 | 3-1 | 2,940 | 1-7 | 1,130 | 1-20 | 640 | 0-70 | 350 | 0-55 | 305 |
| 9 | 3-0 | 2,800 | 1-5 | 915 | 1-0 | 500 | 0-70 | 350 | 0-55 | 305 |
| 10 | 2-85 | 2,630 | 1-4 | 820 | 0-90 | 440 | 0-70 | 350 | 0-55 | 305 |
| 11 | 3-15 | 3,010 | 1-5 | 915 | 1-00 | 500 | 0-70 | 350 | 0-55 | 305 |
| 12 | 3-3 | 3,220 | 1-9 | 1,370 | 1-00 | 500 | 0-70 | 350 | 0-50 | 290 |
| 13 | 3-4 | 3,360 | 2-0 | 1,490 | 0-85 | 415 | 0-65 | 335 | 0-50 | 290 |
| 14 | 3-3 | 3,220 | 2-0 | 1,490 | 0-80 | 390 | 0-70 | 350 | 0-50 | 290 |
| 15 | 2-9 | 2,670 | 1-95 | 1,430 | 0-70 | 350 | 0-70 | 350 | Freeze- up. | 280 |
| 16 | 2-5 | 2,135 | 1-9 | 1,370 | 0-80 | 390 | 0-70 | 350 | | 270 |
| 17 | 2-5 | 2,130 | 1-5 | 915 | 0-70 | 350 | 0-65 | 335 | | 260 |
| 18 | 2-7 | 2,390 | 1-5 | 915 | 0-80 | 390 | 0-65 | 335 | | 250 |
| 19 | 3-05 | 2,870 | 1-7 | 1,130 | 0-70 | 350 | 0-65 | 335 | | 250 |
| 20 | 2-6 | 2,260 | 1-5 | 915 | 0-70 | 350 | 0-65 | 335 | | 250 |
| 21 | 2-1 | 1,610 | 1-7 | 1,130 | 0-70 | 350 | 0-60 | 320 | | 240 |
| 22 | 1-9 | 1,370 | 1-5 | 915 | 0-70 | 350 | 0-60 | 320 | | 240 |
| 23 | 1-9 | 1,370 | 1-5 | 915 | 0-70 | 350 | 0-55 | 305 | | 240 |
| 24 | 1-9 | 1,370 | 1-35 | 772 | 0-70 | 350 | 0-55 | 305 | | 240 |
| 25 | 1-9 | 1,370 | 1-5 | 915 | 0-70 | 350 | 0-55 | 305 | | 240 |
| 26 | 2-0 | 1,490 | 1-45 | 867 | 0-70 | 350 | 0-55 | 305 | | 230 |
| 27 | 2-1 | 1,610 | 1-5 | 915 | 0-75 | 370 | 0-55 | 305 | | 250 |
| 28 | 2-1 | 1,610 | 1-35 | 772 | 0-70 | 350 | 0-60 | 320 | | 230 |
| 29 | 1-9 | 1,370 | 1-35 | 772 | 0-70 | 350 | 0-60 | 320 | | 220 |
| 30 | 2-15 | 1,680 | 1-3 | 725 | 0-70 | 350 | 0-70 | 350 | | 210 |
| 31 | 2-2 | 1,740 | 1-3 | 725 | | | 0-70 | 350 | | |

MONTHLY DISCHARGE of Toby Creek near Athalmer for 1914.

(Drainage area, 180 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage Area. | Total in Acre-feet. |
| June | 1,870 | 440 | 1,120 | 6-23 | 7-18 | 68,900 |
| July | 3,360 | 1,130 | 1,960 | 10-9 | 12-2 | 117,000 |
| August | 3,360 | 1,370 | 2,340 | 13-0 | 15-0 | 144,000 |
| September | 2,130 | 725 | 1,210 | 6-72 | 7-75 | 74,400 |
| October | 915 | 350 | 479 | 2-66 | 2-97 | 28,500 |
| November | 350 | 305 | 336 | 1-87 | 2-16 | 20,700 |
| December | 350 | ... | 276 | 1-53 | 1-71 | 16,400 |

Accuracy "C".

NORTH VERMILION CREEK, NEAR EDGEWATER (3032).

Location.—The station is about 200 yards above the Golden-Windermere highway bridge. Revelstoke district.*Records Available.*—April 15, to September 30, 1914.

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Climatic Conditions.—Similar to South Vermilion creek.

Gauge.—Vertical staff gauge at measuring section. Read during 1914 by Mrs. S. B. Harrison.

Channel.—Clean and gravelly. Not subject to shifts.

Discharge Measurements.—Seven measurements were made in 1914, by wading.

Co-operation.—The station was maintained in 1914 by co-operation between the British Columbia Hydrographic Survey and the Provincial Water Rights Branch.

Accuracy.—The data should be within 15 per cent.

General.—North Vermilion creek rises on the westerly slope of the Rocky mountains and flows westward into the Columbia river. This creek drains an area of about 20 square miles. The water of North Vermilion creek is utilized by the Columbia Valley Orchards, Ltd., for irrigation.

DISCHARGE MEASUREMENTS of North Vermilion Creek, near Edgewater, for 1914.

| Date. | Hydrographer. | Meter No. | Width | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------|------------------|-----------|-------|------------------|----------------|---------------|---------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914 | | | | | | | |
| April 18 | O. J. B. (Prov.) | | 13.0 | 8.85 | 2.38 | 0.70 | 21.10 |
| May 6 | D. O' B. G. | 1048 | 14.0 | 16.7 | 4.00 | 1.30 | 66.70 |
| May 26 | J. K. B. (Prov.) | | 15.2 | 27.7 | 5.04 | 1.95 | 139.10 |
| June 17 | J. A. E. | 1909 | 24.0 | 45.0 | 6.53 | 2.80 | 294.00 ¹ |
| July 27 | O. J. B. (Prov.) | | 13.0 | 16.05 | 3.71 | 1.25 | 59.80 |
| Aug. 24 | J. K. B. (Prov.) | | 13.7 | 13.21 | 2.63 | 1.00 | 34.80 |
| Sept. 29 | O. J. B. (Prov.) | | 13.0 | 13.32 | 3.32 | 1.15 | 44.30 |

¹Different section.

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of North Vermilion creek, near Edgewater, for 1914.

| DAY. | April. | | May. | | June. | | July. | | August. | | September. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 5-0 | | 44-2 | 2-3 | 195-0 | 2-3 | 195-0 | | 49-9 | 0-9 | 30-4 |
| 2 | | 6-0 | 1-2 | 52-4 | | 252-0 | | 232-0 | 1-15 | 48-3 | | 30-4 |
| 3 | | 6-0 | 1-6 | 93-4 | 2-9 | 315-0 | 2-7 | 273-0 | | 48-3 | 0-9 | 30-4 |
| 4 | | 6-0 | | 82-2 | | 284-0 | | 304-0 | 1-15 | 48-3 | | 30-4 |
| 5 | | 7-0 | 1-3 | 62-0 | 2-6 | 252-0 | 3-0 | 337-0 | | 49-9 | 0-9 | 30-4 |
| 6 | | 7-0 | 1-30 | 62-0 | | 222-0 | | 348-0 | 1-2 | 52-4 | | 30-4 |
| 7 | | 7-0 | 1-25 | 57-2 | 2-3 | 185-0 | 3-1 | 360-0 | | 48-3 | 0-9 | 30-4 |
| 8 | | 8-0 | | 67-0 | | 178-0 | | 326-0 | 1-1 | 44-2 | | 30-4 |
| 9 | | 8-0 | 1-4 | 72-0 | 2-1 | 162-0 | 2-8 | 294-0 | | 44-2 | 0-9 | 30-4 |
| 10 | | 8-0 | 1-5 | £2 2 | | 170-0 | | 273-0 | 1-1 | 44-2 | | 30-4 |
| 11 | | 9-0 | | 84-4 | 2-2 | 178-0 | 2-6 | 252-0 | | 44-2 | 0-85 | 27-8 |
| 12 | | 9-0 | 1-55 | 87-8 | | 186-0 | | 186-0 | 1-1 | 44-2 | | 28-8 |
| 13 | | 9-0 | | 93-4 | 2-3 | 195-0 | 1-9 | 152-0 | | 40-6 | 0-90 | 30-4 |
| 14 | 0-3 | 9-0 | 1-65 | 99-2 | | 232-0 | | 118-0 | 1-0 | 37-0 | | 30-4 |
| 15 | | 11-0 | | 112-0 | 2-7 | 273-0 | 1-7 | 105-0 | | 37-0 | 0-90 | 30-4 |
| 16 | | 13-6 | 1-9 | 132-0 | | 298-0 | | 105-0 | 1-0 | 37-0 | | 31-7 |
| 17 | | 16-8 | 2-2 | 178-0 | 2-95 | 326-0 | 1-7 | 105-0 | | 37-0 | 0-95 | 33-7 |
| 18 | | 20-6 | | 162-0 | | 326-0 | | 99-2 | 1-0 | 37-0 | | 33-7 |
| 19 | | 25-2 | | 146-0 | 2-95 | 326-0 | 1-6 | 93-4 | | 37-0 | 0-95 | 33-7 |
| 20 | 0-9 | 30-4 | 1-9 | 132-0 | | 337-0 | | 77-1 | 1-0 | 37-0 | 1-00 | 37-0 |
| 21 | 0-9 | 30-4 | | 139-0 | 3-05 | 348-0 | 1-3 | 62-0 | | 37-0 | | 35-0 |
| 22 | | 27-8 | 2-0 | 146-0 | | 326-0 | | 62-0 | 1-0 | 37-0 | 0-95 | 33-7 |
| 23 | 0-8 | 25-2 | | 170-0 | 2-85 | 304-0 | 1-3 | 62-0 | | 37-0 | | 31-7 |
| 24 | | 30-4 | 2-3 | 195-0 | | 246-0 | | 62-0 | 1-0 | 37-0 | 0-9 | 30-4 |
| 25 | 1-0 | 37-0 | | 170-0 | 2-3 | 195-0 | 1-3 | 62-0 | | 37-0 | | 30-4 |
| 26 | | 37-0 | 1-95 | 139-0 | | 170-0 | | 57-2 | 1-0 | 37-0 | 0-9 | 30-4 |
| 27 | | 37-0 | | 122-0 | 2-0 | 146-0 | 1-2 | 52-4 | | 35-0 | 1-1 | 44-2 |
| 28 | 1-0 | 37-0 | 1-7 | 105-0 | | 154-0 | | 48-3 | 0-95 | 33-7 | | 40-0 |
| 29 | | 37-0 | | 105-0 | 2-1 | 162-0 | 1-1 | 44-2 | | 31-7 | | 40-0 |
| 30 | 1-0 | 37-0 | 1-7 | 105-0 | | 178-0 | | 48-3 | 0-90 | 30-4 | | 30-0 |
| 31 | | | 1-75 | 112-0 | | | 1-2 | 52-4 | | 30-4 | | |

MONTHLY DISCHARGE of North Vermilion Creek near Edgewater, for 1914.

(Drainage area, 20 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| May... | 195-0 | 44-2 | 110-0 | 5-50 | 6-34 | 6,760 | D |
| June... | 348-0 | 146-0 | 238-0 | 11-9 | 13-3 | 14,200 | D |
| July... | 360-0 | 44-2 | 156-0 | 7-80 | 8-99 | 9,590 | D |
| August... | 52-4 | 30-4 | 40-3 | 2-02 | 2-33 | 2,480 | C |
| September | 44-2 | 27-8 | 32-2 | 1-61 | 1-80 | 1,920 | C |

SOUTH VERMILION CREEK, NEAR EDGEWATER (3033).

Location.—The station on South Vermilion creek is about 40 feet above the highway bridge of the Golden-Windermere road, and about one-half mile above the mouth. Revelstoke district.

Records Available.—April to September, 1914.

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Climatic Conditions.—Summer is hot, with cold nights. Precipitation is about the same as that of Golden. Winter is of about four and one-half months duration. Minimum temperature about -40° F.

Gauge.—Vertical staff gauge, read in 1914 by Mr. A. Braisher, driver of Rocky Mountain mail stage.

Channel.—Gravelly, and does not seem subject to shifts.

Discharge Measurements.—Eight measurements were made in 1914, by wading.

Co-operation.—This station was maintained in 1914 by co-operation with the Provincial Water Rights Branch.

Accuracy.—Data should be within 20 per cent.

General.—South Vermillion creek rises on the westerly slope of the Rocky mountains and flows westward into the Columbia river. It drains an area of about 10 square miles. The use of the creek is confined to irrigation.

DISCHARGE MEASUREMENTS of South Vermilion Creek, near Edgewater, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|--------------------------|---|-----------|--------------|------------------|----------------|---------------|----------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| April 18. | O. J. B. (Prov.)..... | | 14.6 | 7.50 | 1.58 | 0.40 | 11.90 |
| May 6 " 25..... | D. O'B. G..... J. K. B. (Prov.)..... | 1,048 | 14.5 15.0 | 12.30 15.64 | 2.59 4.16 | 0.60 0.95 | 31.90 65.20 |
| June 21..... | J. A. E..... | 1,909 | 14.5 | 22.40 | 4.78 | 1.20 | 107.00 |
| July 27..... | O. J. B. (Prov.)..... | | 14.0 | 11.95 | 2.77 | 0.79 | 33.10 |
| Aug. 3..... " 24..... | J. A. E..... J. K. B. (Prov.)..... | 1,909 | 14.5 14.5 | 12.80 11.69 | 2.74 1.90 | 0.70 0.55 | 35.20 22.20 |
| Sept. 30..... | "..... | | 14.0 | 9.53 | 2.08 | 0.58 | 19.80 |

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DAILY GAUGE HEIGHT AND DISCHARGE of South Vermilion Creek, near Edgewater, for 1914.

| DAY. | April. | | May. | | June. | | July. | | August. | | September. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 6-0 | 0-75 | 43-8 | | 75-0 | 1-2 | 105-0 | 0-7 | 38-2 | 0-55 | 23-6 |
| 2 | | 6-0 | 0-7 | 38-2 | 1-10 | 89-6 | | 105-0 | | 38-2 | | 23-6 |
| 3 | | 6-0 | | 36-2 | | 116-0 | 1-2 | 105-0 | 0-7 | 38-2 | 0-55 | 23-6 |
| 4 | | 6-0 | | 34-2 | 1-45 | 145-0 | | 100-4 | | 35-2 | | 21-0 |
| 5 | | 6-0 | 0-65 | 33-1 | | 126-0 | 1-15 | 97-3 | 0-65 | 33-1 | 0-50 | 19-2 |
| 6 | | 6-0 | | 31-1 | 1-20 | 105-0 | | 92-7 | | 33-1 | 0-50 | 19-2 |
| 7 | | 6-0 | 0-6 | 28-1 | 1-10 | 89-6 | 1-1 | 89-6 | | 33-1 | | 19-2 |
| 8 | | 7-0 | | 30-1 | | 85-2 | | 89-6 | 0-65 | 33-1 | 0-50 | 19-2 |
| 9 | | 7-0 | 0-65 | 33-1 | 1-05 | 82-3 | | 75-0 | | 30-1 | | 19-2 |
| 10 | | 7-0 | 0-75 | 43-8 | | 88-1 | 1-0 | 75-0 | 0-6 | 28-1 | 0-50 | 19-2 |
| 11 | | 8-0 | | 41-5 | 1-12 | 92-7 | 0-95 | 68-3 | | 28-1 | | 20-1 |
| 12 | | 8-0 | 0-72 | 40-4 | | 98-8 | 0-95 | 68-3 | 0-6 | 28-1 | 0-52 | 21-0 |
| 13 | | 8-5 | | 44-9 | 1-2 | 105-0 | | 82-3 | 0-65 | 33-1 | 0-50 | 19-2 |
| 14 | 0-35 | 8-55 | 0-8 | 49-2 | 1-35 | 129-0 | 1-15 | 97-3 | 0-6 | 28-1 | | 19-2 |
| 15 | | 9-73 | | 64-3 | | 137-0 | | 83-8 | 0-6 | 28-1 | 0-50 | 19-2 |
| 16 | 0-4 | 11-5 | 1-05 | 82-3 | 1-45 | 145-0 | 0-97 | 71-0 | | 28-1 | 0-52 | 21-0 |
| 17 | | 11-5 | 1-0 | 75-0 | | 145-0 | | 68-3 | 0-6 | 28-1 | | 21-9 |
| 18 | 0-4 | 11-5 | | 72-3 | 1-45 | 145-0 | | 65-6 | | 25-4 | 0-55 | 23-6 |
| 19 | 0-45 | 15-3 | 0-95 | 68-3 | | 137-0 | 0-90 | 61-6 | 0-55 | 23-6 | | 26-3 |
| 20 | | 17-7 | | 64-3 | 1-35 | 129-0 | | 61-6 | | 23-6 | 0-60 | 28-1 |
| 21 | 0-50 | 19-2 | 0-9 | 61-6 | 1-20 | 105-0 | 0-90 | 61-6 | 0-55 | 23-6 | | 28-1 |
| 22 | | 16-9 | | 61-6 | | 97-3 | 57-9 | 57-9 | 0-55 | 23-6 | 0-59 | 27-2 |
| 23 | 0-45 | 15-3 | 0-9 | 61-6 | 1-10 | 89-6 | 0-85 | 55-4 | | 23-6 | | 26-3 |
| 24 | | 15-3 | 0-95 | 68-3 | | 94-2 | | 61-6 | 0-55 | 23-6 | 0-58 | 26-3 |
| 25 | 0-45 | 15-3 | | 68-3 | 1-15 | 97-3 | 0-95 | 68-3 | | 23-6 | | 25-4 |
| 26 | 0-5 | 19-2 | 0-95 | 68-3 | | 97-3 | 0-8 | 49-3 | 0-55 | 23-6 | 0-57 | 25-4 |
| 27 | | 19-2 | | 64-3 | 1-15 | 97-3 | | 49-3 | | 23-6 | | 25-0 |
| 28 | 0-5 | 19-2 | 0-88 | 59-1 | 1-10 | 89-6 | 0-8 | 49-3 | | 23-6 | | 23-0 |
| 29 | | 21-0 | | 54-2 | | 91-1 | | 47-1 | | 23-6 | | 21-0 |
| 30 | 0-55 | 23-6 | 0-8 | 49-3 | 1-12 | 92-7 | 0-75 | 43-8 | 0-55 | 23-6 | | 20-0 |
| 31 | | | 0-9 | 61-6 | | | | 40-4 | | 23-6 | | |

MONTHLY DISCHARGE of South Vermilion, near Edgewater, for 1914.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|--------|---------------------------|----------|-------|------------------|-------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches | Total in acre-feet. |
| | | | | | of Drainage area. | |
| March | 23-6 | | 11-9 | 1-19 | 1-33 | 708 |
| April | 82-3 | 28-1 | 52-6 | 5-26 | 6-06 | 3,230 |
| May | 145-0 | 82-3 | 107-0 | 10-7 | 11-9 | 6,370 |
| June | 105-0 | 40-4 | 72-4 | 7-24 | 8-35 | 4,450 |
| July | 38-2 | 23-6 | 28-2 | 2-82 | 3-25 | 1,730 |
| August | 28-1 | 19-2 | 22-5 | 2-25 | 2-51 | 1,340 |

Accuracy "D".

WINDERMERE CREEK, NEAR WINDERMERE (3055).

Location.—The station is about 5 miles from the mouth, and above Tegart's diversion. It is about 7 miles from the town of Windermere, Revelstoke district.

Records Available.—April 1 to September 30, 1914.

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Climatic Conditions.—Same as Invermere. (See Toby creek.)*Gauge.*—Vertical staff gauge at station. Read tri-weekly by Mr. Lloyd Tegart.*Channel.*—Broken gravelley, and subject to shifts.*Discharge Measurements.*—Four in 1913; six in 1914, by wading.*Co-operation.*—Station maintained in 1914 by co-operation with the Provincial Water Rights Branch.*Accuracy.*—Results on Windermere creek are not guaranteed.*General.*—Windermere creek flows from the westerly slope of the Rockies, rising in Tegart's pass and flowing to Windermere lake, draining an area of 15 square miles. It is practically all used for irrigation and domestic purposes.

DISCHARGE MEASUREMENTS of Windermere Creek, near Windermere, B.C., for 1913-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------------|-------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913. | | | | | | | |
| Sept. 26..... | O. J. B. (Prov.)..... | 6,018 | ..... | 6.50 | 3.14 | 0.60 | 20.4 |
| Nov. 7..... | "..... | 6,018 | ..... | 5.42 | 3.23 | 0.50 | 17.5 |
| July 22..... | "..... | 6,018 | ..... | 8.30 | 3.08 | 0.60 | 25.6 |
| 1914. | | | | | | | |
| April 14..... | O. J. B. (Prov.)..... | 6,018 | 10.0 | 4.74 | 2.60 | 0.43 | 12.3 |
| May 12..... | "..... | 6,018 | 10.0 | 5.06 | 3.30 | 0.48 | 16.7 |
| June 20..... | J. A. E..... | 1,969 | 13.0 | 13.7 | 4.46 | 1.15 | 61.1 |
| July.. 28..... | O. J. B. (Prov.)..... | 6,018 | 13.5 | 9.4 | 3.38 | 0.77 | 31.8 |
| Aug. 26..... | J. K. Bell (Prov.)..... | 6,018 | 14.4 | 9.3 | 3.60 | 0.70 | 33.4 |
| Sept. 30..... | "..... | 6,018 | 12.3 | 7.5 | 3.30 | 0.70 | 24.9 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Windermere Creek, near Windermere, for 1914.

| DAY. | April. | | May. | | June. | | July. | | August. | | September. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | 12-0 | | 15-3 | 1-1 | 57-2 | | 54-4 | | 38-8 | | 29-8 |
| 2 | | 12-0 | | 15-2 | | 69-1 | 1-07 | 54-9 | 0-85 | 38-8 | 0-72 | 30-1 |
| 3 | | 13-0 | | 15-1 | 1-4 | 81-0 | | 54-9 | | 38-8 | | 31-0 |
| 4 | | 13-0 | 0-45 | 15-0 | | 77-8 | | 54-9 | 0-85 | 38-8 | 0-75 | 32-0 |
| 5 | 0-42 | 13-5 | | 15-3 | 1-32 | 74-6 | 1-07 | 54-9 | | 37-6 | 0-80 | 35-3 |
| 6 | | 13-5 | | 15-6 | | 71-8 | | 51-8 | | 36-5 | | 35-3 |
| 7 | | 13-5 | 0-47 | 15-9 | 1-25 | 69-0 | | 48-8 | 0-80 | 35-3 | 0-80 | 35-3 |
| 8 | 0-42 | 13-5 | | 16-3 | | 69-1 | 0-95 | 45-8 | | 35-3 | | 37-0 |
| 9 | | 13-5 | | 16-7 | 1-1 | 57-2 | | 46-2 | 0-80 | 35-3 | 0-85 | 38-8 |
| 10 | | 13-5 | | 17-0 | | 63-1 | | 46-6 | | 35-3 | | 38-8 |
| 11 | | 13-5 | 0-50 | 17-4 | 1-25 | 69-0 | | 47-0 | 0-80 | 35-3 | | 38-8 |
| 12 | 0-42 | 13-5 | | 18-0 | | 69-0 | 0-97 | 47-3 | | 35-3 | 0-85 | 38-8 |
| 13 | | 14-0 | | 18-5 | 1-25 | 69-0 | | 47-3 | | 35-3 | | 38-8 |
| 14 | | 14-0 | 0-53 | 19-0 | 1-3 | 73-0 | | 47-3 | 0-80 | 35-3 | 0-85 | 38-8 |
| 15 | 0-44 | 14-5 | | 21-8 | | 71-6 | 0-97 | 47-3 | | 32-0 | | 39-1 |
| 16 | | 14-7 | 0-63 | 24-6 | | 70-3 | | 46-1 | 0-70 | 28-8 | | 39-6 |
| 17 | | 14-9 | 0-75 | 32-0 | 1-25 | 69-0 | | 44-8 | | 28-8 | 0-87 | 40-1 |
| 18 | | 15-1 | | 30-4 | | 67-0 | | 43-5 | 0-70 | 28-8 | | 41-2 |
| 19 | 0-46 | 15-4 | 0-70 | 28-8 | 1-2 | 65-0 | 0-90 | 42-2 | 0-70 | 28-8 | 0-90 | 42-2 |
| 20 | | 15-6 | | 28-8 | 1-1 | 57-2 | 0-90 | 42-2 | | 28-8 | | 40-5 |
| 21 | | 15-8 | 0-70 | 28-8 | | 52-2 | | 39-5 | | 28-8 | | 38-8 |
| 22 | 0-47 | 15-9 | | 30-4 | | 47-2 | 0-82 | 36-7 | 0-70 | 28-8 | | 37-2 |
| 23 | | 15-8 | 0-75 | 32-0 | 0-9 | 42-2 | | 38-5 | | 28-8 | | 35-6 |
| 24 | | 15-6 | | 33-7 | | 44-6 | | 40-3 | | 28-8 | 0-88 | 34-0 |
| 25 | | 15-5 | 0-80 | 35-5 | | 47-0 | 0-90 | 42-2 | 0-70 | 28-8 | | 34-0 |
| 26 | 0-46 | 15-4 | | 34-7 | 1-0 | 49-5 | | 42-2 | | 28-8 | | 34-0 |
| 27 | | 15-4 | | 34-0 | | 50-8 | 0-90 | 42-2 | 0-70 | 28-8 | 0-88 | 34-0 |
| 28 | | 15-4 | 0-77 | 33-4 | | 52-1 | | 41-4 | | 28-8 | | 33-6 |
| 29 | 0-46 | 15-4 | | 32-7 | 1-05 | 53-4 | | 40-5 | 0-70 | 28-8 | | 33-2 |
| 30 | | 15-4 | 0-75 | 32-0 | | 53-9 | | 39-6 | | 29-1 | 0-66 | 32-7 |
| 31 | | | | 44-6 | | | 0-85 | 38-8 | | 29-5 | | |

MONTHLY DISCHARGE of Windermere Creek, near Windermere, for 1914.

| MONTH. | DISCHARGE, IN SECOND-FEET. | | | | RUN-OFF. | | |
|--------|----------------------------|----------|-------|------------------|-----------------------------------|---------------------|-------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| March | | 15-9 | | 14-4 | 0-96 | 1-07 | 857 |
| April | | 35-3 | 15-0 | 24-8 | 1-65 | 1-90 | 1,520 |
| May | | 61-0 | 42-2 | 61-9 | 4-13 | 4-61 | 3,680 |
| June | | 58-9 | 36-7 | 45-5 | 3-03 | 3-49 | 2,800 |
| July | | 38-8 | 28-8 | 32-4 | 2-16 | 2-49 | 1,990 |
| August | | 42-2 | 29-8 | 36-3 | 2-42 | 2-70 | 2,160 |

BULL RIVER, NEAR MOUTH (3039).

Location.—At mouth, near Bull River settlement, 6 miles from Wardner, in south-east Kootenay, Cranbrook district.

Records Available.—May to November, 1914.

Climatic Conditions.—The summers are hot and dry. The winters are very severe, with a light snowfall in the lower altitudes. Ice conditions exist generally

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from some time in November till about the first of April. During this period extreme low flow may be anticipated, and frazil ice is to be expected.

Gauge.—A vertical staff gauge, situated about 100 yards below Bull River Lumber Company's (C.P.R.) dam, one-quarter mile from Bull river and 1 mile from the mouth.

Channel.—Channel is straight for 100 yards above and below the gauge.

Discharge Measurements.—Nine well-distributed measurements were made from the railway bridge in 1914.

Accuracy.—The channel at the measuring section shifted considerably during June and possibly the first week in July. The daily gauge readings are reliable. The results during May, June, and July, are considered to be within 20 per cent, and after July, 10 per cent.

General.—Bull river is a stream about 30 miles long. It rises in the Rockies, amongst peaks from 8,000 to 10,000 feet above sea-level, and flows generally in a southwesterly direction through various canyons and over shifting gravel beds into the Kootenay, near the settlement of Bull river, 6 miles from Wardner, B.C. The stream generally is from 30 to 150 feet wide, but about 6 miles from the mouth it is confined in a deep rock canyon, in places not over 15 feet in width at the top. This canyon extends for about 400 feet, and in this distance the river drops 175 feet, about half of this being a perpendicular fall 100 feet from the head of the canyon. A little over 1 mile from the mouth the river is controlled by the Bull River Lumber Company's dam, built to form a pond for logs.

A company owns timber limits towards the source of the stream, and every year this company has been driving logs down the river to their mill near the mouth, where the logs are sawn into ties.

Some seven or eight years ago a company commenced the installation of a hydro-electric development at the above mentioned canyon, about 6 miles from the mouth. A cedar flume, 16 feet by 8 feet, and some 10,000 feet in length was constructed. By means of this flume a head of about 250 feet was obtained. The installation has not been completed to date, in fact practically nothing has been done since the flume was constructed.



Cranbrook District (V)—Bull river looking up from metering section.

6 GEORGE V, A. 1916

DISCHARGE MEASUREMENTS of Bull River, at Mouth, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | | Mean Velocity | Gauge Height | Discharge. |
|--------------|----------------------------|-----------|--------|---------|---------------|--------------|--------------------|
| | | | Feet. | Sq. ft. | | | |
| Apr. 28..... | H. B. H. & C. E. R..... | 1048 | 94 | 502 | 3.78 | 2-02 | 1,870 |
| May 15..... | D. O. B. Gill..... | 1048 | 122 | 677 | 7-01 | 4-10 | 4,880 ¹ |
| June 6..... | " "..... | 1048 | 121 | 678 | 6-19 | 3-50 | 3,770 ¹ |
| " 15..... | " "..... | 1048 | 121 | 642 | 7-04 | 4-10 | 4,980 ¹ |
| July 30..... | D. O. B. G. & R. H. H..... | 1929 | 79 | 388 | 3-39 | 1-36 | 1,310 |
| " 26..... | " "..... | 1929 | 94 | 442 | 3-16 | 1-40 | 1,460 |
| Oct. 8..... | " "..... | 1929 | 94-5 | 425 | 1-60 | 0-74 | 685 |
| " 13..... | " "..... | 1929 | 94-5 | 419 | 1-59 | 0-70 | 668 |
| Dec. 17..... | J. A. E. & C. B. C..... | 1909 | 37 | 117 | 1-19 | ..... | 141. ² |

¹ Soundings incorrect.² Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Bull River, at Mouth, for 1914.

| Day. | April. | | May. | | June. | |
|---------|--------------|-----------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | | | 2-4 | 2,600 | 3-9 | 4,660 |
| 2..... | | | 3-4 | 3,950 | 4-7 | 5,830 |
| 3..... | | | 4-0 | 4,800 | 5-5 | 7,060 |
| 4..... | | | 3-6 | 4,230 | 5-2 | 6,590 |
| 5..... | | | 3-0 | 3,390 | ..... | 5,340 |
| 6..... | | | 2-7 | 2,990 | 3-5 | 4,090 |
| 7..... | | | 2-4 | 2,600 | 3-4 | 3,950 |
| 8..... | | | 2-4 | 2,600 | 2-9 | 3,250 |
| 9..... | | | 3-3 | 3,810 | 2-4 | 2,600 |
| 10..... | | | 3-3 | 3,810 | 2-4 | 2,600 |
| 11..... | | | 3-3 | 3,810 | 2-5 | 2,730 |
| 12..... | | | 3-0 | 3,390 | 2-8 | 3,120 |
| 13..... | | | 3-3 | 3,810 | 3-2 | 3,660 |
| 14..... | | | 3-6 | 4,230 | 3-7 | 3,990 |
| 15..... | | | 4-1 | 4,940 | 4-1 | 4,940 |
| 16..... | | | 4-3 | 5,230 | 4-3 | 5,230 |
| 17..... | | | 4-2 | 5,080 | 4-4 | 5,380 |
| 18..... | | | 4-2 | 5,080 | 5-1 | 6,440 |
| 19..... | | | 3-95 | 4,730 | 4-6 | 5,680 |
| 20..... | | | 3-8 | 4,510 | 4-1 | 4,940 |
| 21..... | | | 3-3 | 3,810 | 3-4 | 3,950 |
| 22..... | | | 3-5 | 4,090 | 3-1 | 3,520 |
| 23..... | | | 3-4 | 3,950 | 2-7 | 2,990 |
| 24..... | | | 3-8 | 4,510 | 2-4 | 2,600 |
| 25..... | | | 3-9 | 4,660 | 3-0 | 3,390 |
| 26..... | | | 3-6 | 4,230 | 3-0 | 3,390 |
| 27..... | | | 3-4 | 3,950 | 2-9 | 3,250 |
| 28..... | | | 2-0 | 2,100 | 3-0 | 3,390 |
| 29..... | | | 1-9 | 1,970 | 2-7 | 2,990 |
| 30..... | | | 2-0 | 2,100 | 2-6 | 2,860 |
| 31..... | | | | | 3-1 | 3,520 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Bull River, at Mouth, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 3-2 | 3,660 | 1-3 | 1,290 | 0-50 | 475 | 0-7 | 665 | 1-9 | 1,970 | 0-6 | 570 |
| 2. | 3-4 | 3,950 | 1-3 | 1,296 | 0-50 | 475 | 0-9 | 860 | 2-1 | 2,220 | 0-6 | 570 |
| 3. | 3-4 | 3,950 | 1-3 | 1,290 | 0-40 | 390 | 0-9 | 860 | 1-7 | 1,740 | 0-6 | 570 |
| 4. | 3-5 | 4,090 | 1-2 | 1,180 | 0-40 | 390 | 0-9 | 850 | 1-7 | 1,740 | 0-5 | 475 |
| 5. | 3-4 | 3,950 | 1-1 | 1,070 | 0-40 | 390 | 0-8 | 760 | 1-9 | 1,970 | 0-5 | 475 |
| 6. | 3-3 | 3,810 | 1-0 | 960 | 0-40 | 390 | 0-8 | 760 | 1-7 | 1,740 | 0-6 | 570 |
| 7. | | 3,640 | 1-0 | 960 | 0-40 | 390 | 0-7 | 665 | 1-7 | 1,740 | 0-4 | 390 |
| 8. | | 3,400 | 1-0 | 960 | 0-50 | 475 | 0-7 | 665 | 1-5 | 1,510 | 0-4 | 390 |
| 9. | | 3,200 | 0-9 | 860 | 0-50 | 475 | 0-7 | 665 | 1-3 | 1,290 | Frozen. | |
| 10. | | 3,000 | 0-9 | 860 | 0-50 | 475 | 0-7 | 665 | 1-3 | 1,290 | | |
| 11. | 2-6 | 2,860 | 0-8 | 760 | 0-50 | 475 | 0-7 | 665 | 1-3 | 1,290 | | |
| 12. | 2-5 | 2,730 | 0-8 | 760 | 0-50 | 475 | 0-7 | 665 | 1-2 | 1,180 | | |
| 13. | 2-7 | 2,990 | 0-8 | 760 | 0-50 | 475 | 0-7 | 665 | 1-2 | 1,180 | | |
| 14. | 2-5 | 2,730 | 0-8 | 760 | 0-50 | 475 | 0-8 | 760 | 1-0 | 960 | | |
| 15. | 2-5 | 2,730 | 0-8 | 760 | 0-50 | 475 | 1-0 | 960 | 0-7 | 665 | | |
| 16. | 2-4 | 2,670 | 0-8 | 760 | 0-50 | 475 | 1-1 | 1,070 | 0-6 | 570 | | |
| 17. | 2-1 | 2,220 | 0-8 | 760 | 0-60 | 570 | 1-1 | 1,070 | 0-6 | 570 | | |
| 18. | 2-1 | 2,220 | 0-9 | 860 | 0-70 | 665 | 1-1 | 1,070 | 0-6 | 570 | | |
| 19. | 2-0 | 2,100 | 0-7 | 665 | 1-60 | 1,620 | 1-5 | 1,510 | 0-6 | 570 | | |
| 20. | 2-0 | 2,100 | 0-7 | 665 | 1-20 | 1,180 | 1-4 | 1,400 | 0-8 | 760 | | |
| 21. | 1-9 | 1,970 | 0-7 | 665 | 1-00 | 960 | 1-2 | 1,180 | 0-8 | 760 | | |
| 22. | 1-7 | 1,740 | 0-7 | 665 | 0-90 | 860 | 1-0 | 960 | 0-7 | 665 | | |
| 23. | 1-5 | 1,510 | 0-7 | 665 | 1-00 | 960 | 0-9 | 860 | 0-7 | 665 | | |
| 24. | 1-5 | 1,510 | 0-7 | 665 | 1-00 | 960 | 0-9 | 860 | 0-6 | 570 | | |
| 25. | 1-5 | 1,510 | 0-6 | 570 | 1-00 | 960 | 0-9 | 860 | 0-6 | 570 | | |
| 26. | 1-5 | 1,510 | 0-6 | 570 | 1-00 | 960 | 0-9 | 860 | 0-9 | 860 | | |
| 27. | 1-5 | 1,510 | 0-6 | 570 | 1-20 | 1,180 | 0-8 | 760 | 0-7 | 635 | | |
| 28. | 1-5 | 1,510 | 0-6 | 570 | 1-00 | 960 | 0-8 | 760 | 0-7 | 665 | | |
| 29. | 1-4 | 1,430 | 0-6 | 570 | 0-90 | 860 | 0-8 | 760 | 0-6 | 570 | | |
| 30. | 1-3 | 1,290 | 0-6 | 570 | 0-80 | 760 | 0-8 | 760 | 0-6 | 570 | | |
| 31. | 1-3 | 1,290 | 0-5 | 475 | | | 1-0 | 960 | | | | |

MONTHLY DISCHARGE of Bull River, at Mouth, for 1914.

(Drainage Area, 420 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|-------|-----------------|-----------------------------------|--------------------|----------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area. | Total in acre-feet | |
| | | | | | | | |
| May | 5,230 | 2,600 | 3,920 | 9-33 | 10-8 | 241,000 | D |
| June | 7,060 | 2,600 | 4,190 | 9-98 | 11-2 | 249,000 | D |
| July | 1,093 | 1,120 | 2,410 | 5-74 | 6-62 | 148,000 | D |
| August | 1,290 | 475 | 800 | 1-90 | 2-19 | 49,190 | B |
| September | 1,620 | 390 | 688 | 1-64 | 1-83 | 40,900 | B |
| October | 1,510 | 665 | 866 | 2-06 | 2-37 | 53,200 | B |
| November | 2,220 | 570 | 1,070 | 2-55 | 2-84 | 63,670 | B |

CHERRY CREEK, NEAR WASA (3038).

Location.—About 1 mile above the mouth, near Wasa, in south-east Kootenay. Cranbrook district.

Records Available.—May to November, 1913; May to September, 1914.

Climatic Conditions.—Summers hot and dry, winters severe (as low as $-50^{\circ}\text{F}.$) with a light snowfall. Generally similar to Cranbrook (see St. Marys river).

Gauge.—Vertical staff gauge, marked in feet and inches, located on highway bridge about 1 mile from mouth.

Channel.—Channel is regular and affords a good measuring section. Slight shifts are possible.

Discharge Measurements.—Discharges from May to June 30, 1913, were plotted from a curve based on measurements made by Mr. H. B. Hicks, District Engineer, Provincial Water Rights Branch. The 1914 curve was plotted from five discharge measurements made in 1914 after June 30. Measurements made in 1913 after June 30 fit on the 1914 curve, so 1913 discharges after June 30 were plotted from the 1914 curve.

Accuracy.—1913, 20 per cent; 1914, 10 per cent and 15 per cent.

Co-operation.—During 1914 this station was maintained by co-operation with the Provincial Water Rights Branch.

General.—Cherry creek is a small tributary of the Kootenay, flowing in from the right near Wasa in southeast Kootenay. The drainage area, as taken from the only available maps, appears in the neighbourhood of 80 square miles. The stream is used for irrigation.

DISCHARGE MEASUREMENTS of Cherry Creek, near Wasa, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 28..... | D. O. B. G., R. H. H..... | 1530 | 16.5 | 32.8 | 4.61 | 1.133 | 152 |
| July 15..... | R. H. H. (Prov.)..... | | 16.5 | 30.2 | 3.05 | 0.958 | 92.2 |
| July 24..... | D. O. B. G..... | 1929 | 16.5 | 24.2 | 2.34 | 0.604 | 56.7 |
| Aug. 31..... | H. B. H. (Prov.)..... | | 16.5 | 13.7 | 1.18 | 0.662 | 16.2 |
| Sept. 25..... | " "..... | | 16.5 | 16.3 | 1.37 | 0.229 | 22.3 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1913.

| Day. | May. | | June. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Inches. | Sec.-ft. | Inches. | Sec.-ft. |
| 1..... | | 40-0 | 26-5 | 353-0 |
| 2..... | | 45-0 | 27-2 | 370-0 |
| 3..... | | 50-0 | 26-2 | 346-0 |
| 4..... | | 55-0 | 27-0 | 365-0 |
| 5..... | | 60-0 | 27-0 | 365-0 |
| 6..... | 9-5 | 65-0 | 26-5 | 353-0 |
| 7..... | 10-5 | 75-0 | 25-0 | 318-0 |
| 8..... | 12-5 | 97-0 | 24-0 | 295-0 |
| 9..... | 13-25 | 106-0 | 25-5 | 329-0 |
| 10..... | 15-5 | 137-0 | 26-2 | 346-0 |
| 11..... | 17-0 | 160-0 | 26-0 | 341-0 |
| 12..... | 16-5 | 152-0 | 26-0 | 341-0 |
| 13..... | 16-5 | 152-0 | 23-0 | 273-0 |
| 14..... | 15-5 | 137-0 | 22-5 | 262-0 |
| 15..... | 15-0 | 130-0 | 22-0 | 252-0 |
| 16..... | 15-0 | 130-0 | 21-0 | 232-0 |
| 17..... | 15-0 | 130-0 | 17-0 | 160-0 |
| 18..... | 15-0 | 130-0 | 14-5 | 123-0 |
| 19..... | 14-0 | 116-0 | 14-0 | 116-0 |
| 20..... | 13-0 | 103-0 | 13-5 | 109-0 |
| 21..... | 13-0 | 103-0 | 15-0 | 130-0 |
| 22..... | 15-0 | 130-0 | 14-5 | 123-0 |
| 23..... | 15-0 | 130-0 | 14-5 | 123-0 |
| 24..... | 17-25 | 164-0 | 14-0 | 116-0 |
| 25..... | 22-0 | 252-0 | 14-5 | 123-0 |
| 26..... | 24-0 | 295-0 | 14-5 | 123-0 |
| 27..... | 24-0 | 295-0 | 14-0 | 116-0 |
| 28..... | 24-0 | 295-0 | 16-0 | 144-0 |
| 29..... | 23-0 | 273-0 | 14-5 | 133-0 |
| 30..... | 24-2 | 300-0 | 14-0 | 116-0 |
| 31..... | 24-0 | 295-0 | | |

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1913.

| DAY. | July. | | August. | | September. | | October. | | November. | |
|------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 13.7 | 119.0 | 4.75 | 34.0 | 3.75 | 28.5 | 3.0 | 24.0 | 1.5 | 18.0 |
| 2 | 14.5 | 131.0 | 4.75 | 34.0 | 4.0 | 30.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 3 | 13.75 | 120.0 | 4.75 | 34.0 | 3.5 | 27.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 4 | 13.5 | 116.0 | 4.5 | 32.5 | 3.25 | 25.5 | 3.0 | 24.0 | 1.5 | 18.0 |
| 5 | 13.75 | 120.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 6 | 13.0 | 110.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 7 | 12.5 | 102.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 8 | 12.0 | 97.0 | 4.0 | 30.0 | 3.5 | 27.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 9 | 12.0 | 97.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 10 | 11.0 | 85.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 1.5 | 18.0 |
| 11 | 11.0 | 85.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 2.0 | 20.0 |
| 12 | 10.0 | 75.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 2.0 | 20.0 |
| 13 | 10.0 | 75.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 2.0 | 20.0 |
| 14 | 10.0 | 75.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.5 | 27.0 | 2.0 | 20.0 |
| 15 | 9.25 | 67.5 | 4.0 | 30.0 | 3.0 | 24.0 | 3.5 | 27.0 | 2.0 | 20.0 |
| 16 | 9.0 | 65.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.5 | 27.0 | 2.0 | 20.0 |
| 17 | 8.0 | 56.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.5 | 27.0 | 2.0 | 20.0 |
| 18 | 7.5 | 52.5 | 4.0 | 30.0 | 3.0 | 24.0 | 3.5 | 27.0 | 2.0 | 20.0 |
| 19 | 7.0 | 49.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.5 | 27.0 | 2.0 | 20.0 |
| 20 | 7.0 | 49.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | 1.0 | 16.0 |
| 21 | 7.0 | 49.0 | 4.5 | 32.5 | 3.0 | 24.0 | 3.0 | 24.0 | ..... | 16.0 |
| 22 | 7.0 | 49.0 | 4.0 | 30.0 | 3.0 | 24.0 | 3.0 | 24.0 | ..... | 16.0 |
| 23 | 6.0 | 42.0 | 4.0 | 30.0 | 3.5 | 27.0 | 2.0 | 20.0 | ..... | 16.0 |
| 24 | 6.0 | 42.0 | 4.0 | 30.0 | 3.5 | 27.0 | 2.0 | 20.0 | ..... | 16.0 |
| 25 | 6.0 | 42.0 | 4.0 | 30.0 | 3.5 | 27.0 | 2.5 | 22.0 | ..... | 16.0 |
| 26 | 6.0 | 42.0 | 4.0 | 30.0 | 3.5 | 27.0 | 2.5 | 22.0 | ..... | 16.0 |
| 27 | 5.5 | 38.5 | 4.0 | 30.0 | 3.5 | 27.0 | 2.5 | 22.0 | ..... | 16.0 |
| 28 | 5.0 | 35.0 | 4.0 | 30.0 | 3.0 | 24.0 | 2.5 | 22.0 | ..... | 16.0 |
| 29 | 5.0 | 35.0 | 4.0 | 30.0 | 3.0 | 24.0 | 1.5 | 18.0 | | 16.0 |
| 30 | 5.0 | 35.0 | 4.0 | 30.0 | 3.0 | 24.0 | 1.5 | 18.0 | | 16.0 |
| 31 | 5.0 | 35.0 | 4.0 | 30.0 | | | 1.5 | 18.0 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1914.

| DAY. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Inches. | Sec.-ft. | Inches. | Sec.-ft. | Inches. | Sec.-ft. |
| 1 | | | 14-75 | 132-0 | 13-25 | 112-0 |
| 2 | | | 15-75 | 150-0 | 15-0 | 137-0 |
| 3 | | | 16-5 | 163-0 | 18-25 | 193-0 |
| 4 | | | 17-75 | 183-0 | 22-0 | 268-0 |
| 5 | | | 17-0 | 170-0 | 24-0 | 312-0 |
| 6 | | | 16-5 | 163-0 | 20-5 | 236-0 |
| 7 | | | 15-0 | 137-0 | 18-0 | 188-0 |
| 8 | | | 13-25 | 112-0 | 16-5 | 163-0 |
| 9 | | | | 116-0 | 13-75 | 120-0 |
| 10 | | | 13-75 | 120-0 | 13-0 | 110-0 |
| 11 | | | 15-0 | 137-0 | 12-75 | 105-0 |
| 12 | | | 16-75 | 166-0 | 12-5 | 102-0 |
| 13 | | | 14-75 | 132-0 | 13-75 | 110-0 |
| 14 | 8-75 | 62-8 | 15-0 | 137-0 | 16-0 | 155-0 |
| 15 | 9-0 | 65-0 | 15-0 | 137-0 | 18-5 | 197-0 |
| 16 | 9-5 | 70-0 | 15-25 | 142-0 | 19-5 | 216-0 |
| 17 | 9-5 | 70-0 | 16-75 | 166-0 | 20-5 | 236-0 |
| 18 | 8-75 | 62-8 | 17-75 | 183-0 | 21-5 | 256-0 |
| 19 | 9-5 | 70-0 | 17-25 | 175-0 | 23-5 | 301-0 |
| 20 | 13-0 | 110-0 | 16-75 | 166-0 | 21-5 | 256-0 |
| 21 | 14-5 | 130-0 | 15-75 | 150-0 | 18-5 | 197-0 |
| 22 | 14-0 | 124-0 | 15-0 | 137-0 | 16-5 | 163-0 |
| 23 | 13-25 | 112-0 | 14-25 | 126-0 | 15-5 | 146-0 |
| 24 | 13-75 | 120-0 | 14-0 | 124-0 | 13-5 | 116-0 |
| 25 | 14-75 | 132-0 | 14-25 | 126-0 | 13-5 | 116-0 |
| 26 | 14-5 | 130-0 | 14-0 | 124-0 | 17-25 | 175-0 |
| 27 | 14-0 | 124-0 | 16-0 | 155-0 | 15-2 | 141-0 |
| 28 | 14-0 | 124-0 | 16-0 | 155-0 | 15-0 | 137-0 |
| 29 | 14-0 | 124-0 | 14-5 | 130-0 | 12-2 | 99-0 |
| 30 | 14-25 | 126-0 | 13-5 | 116-0 | 12-0 | 97-0 |
| 31 | | | 12-25 | 100-0 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Cherry Creek, near Wasa, for 1914.

| DAY. | July. | | August. | | September. | | October. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Inches. | Sec.-ft. | Inches. | Sec.-ft. | Inches. | Sec.-ft. | Inches. | Sec.-ft. |
| 1 | 12-0 | 97-0 | 3-0 | 24-0 | 1-0 | 16-0 | 2-0 | 20-0 |
| 2 | 13-0 | 110-0 | 3-0 | 24-0 | 1-0 | 16-0 | 2-0 | 20-0 |
| 3 | 13-0 | 110-0 | 3-0 | 24-0 | 1-0 | 16-0 | 3-0 | 24-0 |
| 4 | 13-0 | 110-0 | 2-7 | 22-8 | 1-0 | 16-0 | 3-0 | 24-0 |
| 5 | 14-0 | 124-0 | 2-5 | 22-0 | 1-0 | 16-0 | 3-0 | 24-0 |
| 6 | 13-2 | 112-0 | 2-5 | 22-0 | 1-0 | 16-0 | 3-0 | 24-0 |
| 7 | 12-5 | 102-0 | 2-5 | 22-0 | 2-0 | 20-0 | 3-0 | 24-0 |
| 8 | 11-5 | 91-0 | 2-5 | 22-0 | 2-0 | 20-0 | | |
| 9 | 11-0 | 85-0 | 2-5 | 22-0 | 2-0 | 20-0 | | |
| 10 | 10-2 | 77-0 | 2-5 | 22-0 | 1-0 | 16-0 | | |
| 11 | 9-5 | 70-0 | 2-5 | 22-0 | 0-5 | 14-0 | | |
| 12 | 9-0 | 65-0 | 2-5 | 22-0 | 0-5 | 14-0 | | |
| 13 | 8-2 | 57-8 | 2-5 | 22-0 | 0-5 | 14-0 | | |
| 14 | 10-7 | 82-0 | 2-5 | 22-0 | 0-5 | 14-0 | | |
| 15 | 12-0 | 97-0 | 2-5 | 22-0 | 0-5 | 14-0 | | |
| 16 | 11-0 | 85-0 | 2-5 | 22-0 | 1-25 | 17-0 | | |
| 17 | 8-7 | 62-3 | 2-5 | 22-0 | 4-0 | 30-0 | | |
| 18 | 8-0 | 56-0 | 2-5 | 22-0 | 4-0 | 30-0 | | |
| 19 | 7-2 | 50-4 | 2-5 | 22-0 | 4-75 | 33-8 | | |
| 20 | 7-0 | 49-0 | 2-5 | 22-0 | 4-75 | 33-8 | | |
| 21 | 7-0 | 49-0 | 2-0 | 20-0 | 4-0 | 30-0 | | |
| 22 | 7-0 | 49-0 | 2-0 | 20-0 | 4-0 | 30-0 | | |
| 23 | 6-2 | 43-4 | 2-0 | 20-0 | 4-0 | 30-0 | | |
| 24 | 6-5 | 45-5 | 2-0 | 20-0 | 3-5 | 27-0 | | |
| 25 | 5-8 | 40-6 | 2-0 | 20-0 | 3-0 | 24-0 | | |
| 26 | 5-0 | 35-0 | 2-0 | 20-0 | 2-5 | 22-0 | | |
| 27 | 5-0 | 35-0 | 1-0 | 16-0 | 2-5 | 22-0 | | |
| 28 | 5-0 | 35-0 | 1-0 | 16-0 | 3-0 | 24-0 | | |
| 29 | 5-0 | 35-0 | 1-0 | 16-0 | 3-0 | 24-0 | | |
| 30 | 5-0 | 35-0 | 1-0 | 16-0 | 3-0 | 24-0 | | |
| 31 | 5-0 | 35-0 | 1-0 | 16-0 | | | | |

MONTHLY DISCHARGE of Cherry Creek, near Wasa, for 1913.

(Drainage area, 80 square miles).

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| May | 300 | | 145-0 | 1-81 | 2-09 | 8,920 |
| June | 370 | 109 | 230-0 | 2-87 | 3-20 | 13,700 |
| July | 131 | 35 | 70-6 | 0-88 | 1-02 | 4,340 |
| August | 34 | 30 | 30-5 | 0-38 | 0-44 | 1,870 |
| September | 30 | 24 | 25-1 | 0-31 | 0-35 | 1,480 |
| October | 27 | 18 | 23-5 | 0-29 | 0-33 | 1,440 |
| November | 20 | | 17-9 | 0-22 | 0-24 | 1,060 |

Accuracy "D."

SESSIONAL PAPER No. 25e

MONTHLY DISCHARGE of Cherry Creek, near Wasa, B.C., for 1914.

(Drainage area, 80 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | Run-Off.- | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| May..... | 183 | 100 | 143 | 1.79 | 2.06 | 8,790 | B 1 |
| June..... | 312 | 97 | 176 | 2.2 | 2.46 | 10,500 | C |
| July..... | 124 | 35 | 68.7 | 0.86 | 0.99 | 4,220 | B |
| August..... | 24 | 16 | 20.9 | 0.26 | 0.30 | 1,290 | B |
| September..... | 33.8 | 14 | 21.5 | 0.27 | 0.30 | 1,280 | B |

ELK RIVER, NEAR ELKO (3048).

Location.—At the cable station 50 yards above the traffic bridge one-quarter mile from Elko in south east Kootenay. Cranbrook district.



Cranbrook District (1)—Photograph showing Elk river cable station above Canyon.

Records Available.—April to November, 1914.

Climatic Conditions.—At Elko, the precipitation from December 1, 1913, to November 30, 1914, was 18.7 inches. The summers are hot and dry. The winters are very severe, as low as -50° F. some seasons, with generally only a light snowfall; 1913-14, approximately 3 feet. Frazil ice may be expected.

Gauge.—A chain gauge was established at the highway bridge, near Elko in November, 1913, and has been read since then by Mr. Wm. Leacey and Mr. Jas. McKee. When the cable station was established in May a new gauge was put in at the section (50 yards above highway bridge). Mr. McKee also read this gauge.

Channel.—The channel below the highway bridge is confined in a canyon, and there is no possibility of shift, though log jams might occasionally affect the gauge readings. The channel above and below the cable station is straight for approximately 40 yards. There is a distinct riffle 30 yards below the section at low water, but at high water it is drowned by the water backing up in its endeavour to get through the narrow canyon below. The low-water control below the cable station may shift somewhat in high water.

Discharge Measurements.—Measurements are made from the cable station. The section is ideal at all stages, except extreme high water, when it is impossible to obtain accurate soundings. In 1914 eight measurements were made, one of which was made on December 18, under ice conditions. Discharge, 630 c.f.s.

Accuracy.—The measurements should be very reliable. Daily gauge readings were obtained, but before July the chain gauge caused trouble. The gauge-height discharge curve appears to be very good. The results after July should be within 5 per cent, and before July 15 per cent.

General.—Elk river is about 150 miles long. It rises near Kananaskis pass, N. latitude $50^{\circ} 35'$, W. longitude $115^{\circ} 05'$, and flows practically due south for about 100 miles, passing through Fernie, and veering slightly to the west passes through Elko and discharges into Kootenay river about 15 miles above the international boundary line. The Elk drains a very mountainous country. The precipitation is not very heavy, being considerably less in this district than in the vicinity of either Field or Glacier.

Elk river is used for lumbering only at present. There is an excellent power site near Elko. Immediately below the highway bridge, Elko, the river enters a canyon about three-quarters of a mile long. In this canyon there is a fall of about 175 feet. A low flow of 400 or 500 c.f.s. may be expected any year, and this is not necessarily a minimum flow. It is anticipated that this power will, at some future date, be harnessed. In order to obtain reliable data a cable station was established a little over 100 yards above this canyon. Very satisfactory open-flow data were obtained in 1914, and in the coming winter one or two low-water measurements will be made.

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DISCHARGE MEASUREMENTS of Elk River, near Traffic bridge, Elko, 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------|--------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| June 5 | D. O'B. G. | 1048 | 218 | 1,380 | 7.81 | 8.95 | 10,800 |
| June 17 | do | 1048 | 211 | 1,140 | 7.47 | 7.95 | 8,570 |
| June 19 | do | 1048 | 213 | 1,200 | 7.42 | 8.15 | 8,950 |
| July 30 | do | 1929 | 195 | 515 | 3.48 | 4.12 | 1,780 |
| July 26 | do | 1929 | 195 | 356 | 3.51 | 4.2 | 1,880 |
| Oct. 7 | do | 1929 | 194 | 455 | 2.95 | 3.55 | 1,360 |
| Oct. 14 | do | 1929 | 195 | 458 | 3.07 | 3.60 | 1,410 |
| Dec. 18 | J. A. E., C. B. C. | 1909 | 70 | 281 | 2.24 | 2.8 | 630 |

Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Elk River, near Elko, B.C., for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|------------|---------------|-------------|---------------|------------|
| | Gauge Height. | Dis-charge | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 2.7 | 930 | 5.4 | 3,380 | 6.6 | 5,520 |
| 2 | 2.75 | 952 | 6.0 | 4,380 | 7.3 | 6,980 |
| 3 | 2.8 | 975 | 6.7 | 5,710 | 8.5 | 9,690 |
| 4 | 2.8 | 975 | 6.5 | 5,340 | 9.15 | 11,300 |
| 5 | 2.85 | 997 | 6.0 | 4,380 | 8.95 | 10,800 |
| 6 | 3.5 | 1,330 | 5.7 | 3,850 | 8.05 | 8,640 |
| 7 | 3.5 | 1,330 | 5.5 | 3,540 | 7.2 | 6,770 |
| 8 | 3.6 | 1,390 | 5.8 | 4,020 | 6.7 | 5,710 |
| 9 | 3.6 | 1,390 | 6.1 | 4,560 | 6.2 | 4,740 |
| 10 | 3.6 | 1,390 | 6.3 | 4,920 | 5.9 | 4,200 |
| 11 | 3.7 | 1,450 | 6.3 | 4,920 | 5.65 | 3,770 |
| 12 | 3.9 | 1,600 | 6.3 | 4,920 | 5.85 | 4,110 |
| 13 | 4.2 | 1,860 | 6.3 | 4,920 | 6.25 | 4,830 |
| 14 | 4.5 | 2,170 | 6.6 | 5,520 | 6.85 | 6,020 |
| 15 | 4.6 | 2,200 | 7.1 | 6,550 | 7.2 | 6,770 |
| 16 | 4.7 | 2,410 | 7.5 | 7,410 | 7.7 | 7,850 |
| 17 | 4.55 | 2,230 | 7.9 | 8,290 | 7.95 | 8,400 |
| 18 | 4.35 | 2,010 | 7.9 | 8,290 | 8.2 | 8,980 |
| 19 | 4.8 | 2,530 | 7.7 | 7,850 | 8.15 | 8,880 |
| 20 | 5.3 | 3,240 | 7.6 | 7,630 | 7.85 | 8,180 |
| 21 | 5.0 | 2,700 | 7.3 | 6,980 | 7.35 | 7,190 |
| 22 | 4.8 | 2,530 | 7.2 | 6,770 | 6.65 | 5,620 |
| 23 | 5.0 | 2,700 | 7.0 | 6,330 | 6.0 | 4,380 |
| 24 | 4.9 | 2,660 | 7.2 | 6,770 | 5.7 | 3,850 |
| 25 | 4.8 | 2,530 | 7.3 | 6,980 | 5.7 | 3,850 |
| 26 | 4.75 | 2,470 | 7.3 | 7,410 | 5.95 | 4,290 |
| 27 | 4.7 | 2,410 | 7.4 | 7,200 | 5.65 | 3,770 |
| 28 | 4.6 | 2,290 | 6.9 | 6,120 | 5.45 | 3,460 |
| 29 | 4.5 | 2,170 | 6.4 | 5,120 | 5.75 | 3,940 |
| 30 | 4.6 | 2,200 | 6.3 | 4,920 | 5.55 | 3,620 |
| 31 | | | 6.5 | 5,340 | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Elk River, near Elko, B.C., for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 5-6 | 3,690 | 4-05 | 1,720 | 3-3 | 1,220 | 3-5 | 1,330 | 4-0 | 1,650 | 3-3 | 1,220 |
| 2 | 5-7 | 3,850 | 4-05 | 1,720 | 3-2 | 1,170 | 3-5 | 1,330 | 4-7 | 2,410 | 3-25 | 1,200 |
| 3 | 5-85 | 4,110 | 4-0 | 1,680 | 3-2 | 1,170 | 3-55 | 1,360 | 4-6 | 2,290 | 3-3 | 1,220 |
| 4 | 6-0 | 4,380 | 3-95 | 1,640 | 3-2 | 1,170 | 3-6 | 1,390 | 4-4 | 2,060 | 3-25 | 1,200 |
| 5 | 6-1 | 4,560 | 3-95 | 1,640 | 3-2 | 1,170 | 3-65 | 1,420 | 4-9 | 2,660 | 3-05 | 1,100 |
| 6 | 6-05 | 4,470 | 3-92 | 1,610 | 3-2 | 1,170 | 3-6 | 1,390 | 4-9 | 2,660 | 3-1 | 1,120 |
| 7 | 5-95 | 4,290 | 3-87 | 1,570 | 3-2 | 1,170 | 3-55 | 1,360 | 4-55 | 2,230 | 2-9 | 1,020 |
| 8 | 5-9 | 4,200 | 3-9 | 1,600 | 3-2 | 1,170 | 3-55 | 1,360 | 4-3 | 1,960 | 2-8 | 975 |
| 9 | 5-8 | 4,020 | 3-9 | 1,600 | 3-25 | 1,200 | 3-55 | 1,360 | 4-15 | 1,810 | 2-7 | 930 |
| 10 | 5-7 | 3,850 | 3-9 | 1,600 | 3-1 | 1,120 | 3-55 | 1,360 | 4-05 | 1,720 | 2-55 | 872 |
| 11 | 5-6 | 3,690 | 3-8 | 1,520 | 3-15 | 1,140 | 3-6 | 1,390 | 4-2 | 1,860 | | 840 |
| 12 | 5-5 | 3,540 | 3-8 | 1,520 | 3-1 | 1,120 | 3-6 | 1,390 | 4-1 | 1,760 | | 810 |
| 13 | 5-4 | 3,380 | 3-7 | 1,450 | 3-1 | 1,120 | 3-55 | 1,360 | 4-0 | 1,680 | | 780 |
| 14 | 5-45 | 3,460 | 3-7 | 1,450 | 3-1 | 1,120 | 3-6 | 1,390 | 3-9 | 1,600 | | 750 |
| 15 | 5-4 | 3,380 | 3-6 | 1,390 | 3-15 | 1,140 | 3-8 | 1,520 | 3-6 | 1,390 | | 720 |
| 16 | 5-3 | 3,240 | 3-6 | 1,390 | 3-15 | 1,140 | 4-0 | 1,680 | 3-4 | 1,270 | | 690 |
| 17 | 5-2 | 3,080 | 3-75 | 1,480 | 3-25 | 1,200 | 4-1 | 1,760 | 3-45 | 1,300 | | 660 |
| 18 | 5-0 | 2,790 | 3-85 | 1,560 | 3-35 | 1,240 | 4-15 | 1,810 | 3-5 | 1,330 | | 630 |
| 19 | 4-8 | 2,530 | 3-75 | 1,480 | 3-8 | 1,520 | 4-35 | 2,010 | 3-5 | 1,330 | | 630 |
| 20 | 4-75 | 2,470 | 3-75 | 1,480 | 3-9 | 1,600 | 4-4 | 2,060 | 3-5 | 1,330 | | 630 |
| 21 | 4-7 | 2,410 | 3-65 | 1,420 | 3-8 | 1,520 | 4-15 | 1,810 | 3-5 | 1,330 | | 630 |
| 22 | 4-65 | 2,350 | 3-55 | 1,360 | 3-7 | 1,450 | 4-0 | 1,680 | 3-45 | 1,300 | | 630 |
| 23 | 4-5 | 2,170 | 3-55 | 1,360 | 3-6 | 1,390 | 3-9 | 1,600 | 3-4 | 1,270 | | 630 |
| 24 | 4-3 | 1,960 | 3-55 | 1,360 | 3-55 | 1,360 | 3-8 | 1,520 | 3-4 | 1,270 | | 640 |
| 25 | 4-25 | 1,910 | 3-55 | 1,360 | 3-55 | 1,360 | 3-75 | 1,480 | 3-4 | 1,270 | | 650 |
| 26 | 4-2 | 1,860 | 3-52 | 1,340 | 3-55 | 1,360 | 3-7 | 1,450 | 3-7 | 1,450 | | 660 |
| 27 | 4-15 | 1,810 | 3-45 | 1,300 | 3-55 | 1,360 | 3-7 | 1,450 | 3-6 | 1,390 | | 670 |
| 28 | 4-15 | 1,810 | 3-45 | 1,300 | 3-55 | 1,360 | 3-6 | 1,390 | 3-6 | 1,390 | | 680 |
| 29 | 4-15 | 1,810 | 3-35 | 1,240 | 3-55 | 1,360 | 3-6 | 1,390 | 3-55 | 1,360 | | 690 |
| 30 | 4-12 | 1,780 | 3-35 | 1,240 | 3-5 | 1,330 | 3-6 | 1,390 | 3-45 | 1,300 | | 700 |
| 31 | 4-05 | 1,720 | 3-3 | 1,220 | | | 3-7 | 1,450 | | | | 710 |

MONTHLY DISCHARGE of Elk River, near Elko, B.C. for 1914.

(Drainage area, 1,600 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| April | 3,240 | 930 | 1,950 | 1-22 | 1-36 | 116,000 | C |
| May | 8,290 | 3,380 | 5,820 | 3-63 | 4-18 | 358,000 | C |
| June | 11,300 | 3,460 | 6,230 | 3-89 | 4-34 | 371,000 | C |
| July | 4,560 | 1,720 | 3,050 | 1-91 | 2-20 | 188,000 | B |
| August | 1,720 | 1,220 | 1,470 | 0-92 | 1-06 | 90,400 | A |
| September | 1,600 | 1,120 | 1,260 | C-79 | 0-88 | 75,000 | A |
| October | 2,060 | 1,330 | 1,500 | 0-94 | 1-08 | 92,200 | A |
| November | 2,660 | 1,270 | 1,660 | 1-04 | 1-16 | 98,800 | A |
| December | 1,220 | | 847 | 0-53 | 0-61 | 52,100 | |

GOLD CREEK, NEAR NEWGATE (3047).

Location.—At highway bridge, half-a-mile from mouth, opposite Flagstone, and 7 miles from international boundary line at Newgate, south-east Kootenay. Cranbrook district.

Records Available.—May to August, 1914.

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Climatic Conditions.—Winters, severe, with light snowfall. Summers, hot and dry.

Gauge.—Wooden staff, 4 feet long, located on downstream side of bridge. Gauge is read three times a week by Mr. F. Neuendorp.

Channel.—Fairly smooth, unbroken, gravel bar below.

Discharge Measurements.—Five-well distributed measurements were made from the bridge in 1914.

Accuracy.—The measurements are very reliable. Three gauge readings a week are obtained. The gauge-height-discharges curve is very good. Accuracy during high water, 15 per cent, during low water, 10 per cent.

Co-operation.—This section was maintained in 1914 by co-operation with the Water Rights Branch (Provincial).

General.—Gold creek rises in the hills south of Cranbrook and flows in a south-easterly direction for about 35 miles, discharging into Kootenay river opposite Flagstone, and about 7 miles above the international boundary line. The drainage area is about 230 square miles. The precipitation throughout the drainage is very light, probably not exceeding 20 inches. Gold creek may be termed an irrigation stream.

DISCHARGE MEASUREMENTS of Gold Creek, near Flagstone, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 17..... | D. O. B. G., R. H. H..... | 1048 | 63.5 | 192 | 5.97 | 2.35 | 1,150 |
| June 18..... | D. O. B. G., H. B. H..... | 1048 | 60 | 112 | 3.02 | 1.35 | 339 |
| July 11..... | R. H. H. (Prov.)..... | | 62 | 744 | 1.65 | 0.75 | 123 |
| July 28..... | D. O. B. G., R. H. H..... | 1929 | 62 | 48.45 | 1.11 | 0.37 | 53.8 |
| Sept. 11..... | H. B. H. (Prov.)..... | | | 30.0 | 0.69 | 0.05 | 20.6 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Gold Creek, near Gateway, for 1914.

| DAY. | May. | | June. | | July. | | August. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|------------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1.75 | 595 | | 646 | | 172 | | 46 |
| 2 | | 793 | 1.9 | 710 | | 169 | | 43 |
| 3 | 22.2 | 990 | | 710 | 0.9 | 169 | 0.25 | 40 |
| 4 | | 920 | | 710 | | 184 | | 40 |
| 5 | 2.05 | 845 | 1.9 | 710 | 1.05 | 210 | 0.25 | 40 |
| 6 | | 800 | | 630 | | 175 | | 37 |
| 7 | | 755 | 1.65 | 525 | 0.85 | 148 | 0.20 | 35 |
| 8 | 1.9 | 710 | | 463 | | 140 | | 37 |
| 9 | | 800 | 1.45 | 398 | | 134 | 0.25 | 40 |
| 10 | 2.1 | 890 | | 381 | 0.75 | 123 | | 38 |
| 11 | | 890 | | 366 | | 123 | 0.20 | 35 |
| 12 | | 845 | 1.35 | 344 | 0.75 | 123 | | 32 |
| 13 | 2.05 | 845 | | 344 | | 123 | | 30 |
| 14 | | 960 | 1.35 | 344 | | 111 | 0.10 | 26 |
| 15 | 2.3 | 1,100 | 1.35 | 344 | 0.70 | 111 | | 26 |
| 16 | | 1,160 | 1.3 | 317 | | 100 | 0.10 | 26 |
| 17 | 2.4 | 1,210 | | 302 | 0.60 | 90 | | 40 |
| 18 | | 1,130 | 1.25 | 294 | | 87 | 0.40 | 60 |
| 19 | | 1,030 | | 280 | 0.55 | 82 | | 50 |
| 20 | 2.15 | 940 | | 266 | | 78 | 0.25 | 40 |
| 21 | | 910 | 1.15 | 250 | 0.50 | 75 | | 57 |
| 22 | 2.1 | 890 | | 238 | | 75 | 0.50 | 75 |
| 23 | | 910 | 1.1 | 230 | | 68 | | 50 |
| 24 | | 920 | | 280 | 0.45 | 68 | 0.15 | 30 |
| 25 | 2.15 | 940 | | 338 | | 64 | | 28 |
| 26 | | 845 | 1.45 | 398 | 0.40 | 60 | 0.10 | 26 |
| 27 | 1.95 | 755 | | 317 | | 57 | | 29 |
| 28 | | 686 | 1.15 | 250 | 0.35 | 53 | 0.15 | 30 |
| 29 | 1.8 | 630 | | 210 | | 53 | | 28 |
| 30 | | 616 | 0.95 | 175 | 0.35 | 53 | 0.10 | 26 |
| 31 | 1.75 | 595 | | | | 49 | | 26 |

MONTHLY DISCHARGE of Gold Creek, near Gateway, for 1914.

(Drainage area, 230 square miles.)

| MONTH | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|--------|---------------------------|----------|-------|------------------|-----------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage | Total in Acre-feet. | |
| | | | | | | | |
| June | 710 | 175 | 392 | 1.70 | 1.90 | 23,300 | B. |
| July | 210 | 49 | 107 | 0.46 | 0.53 | 6,580 | B. |
| August | 60 | 26 | 37.6 | 0.16 | 0.18 | 2,310 | B. |

KOOTENAY RIVER, NEAR WARDNER (3041).

Location.—At the highway bridge near Wardner, above the mouth of Elk river, below the mouths of Bull and St. Mary's rivers and about 35 miles from the international boundary line. Cranbrook district.

Records Available.—April to December, 1914.

Climatic Conditions.—The precipitation at Wardner in 1914 was about 17 inches. The summers are hot and dry and the winters are severe. Cold

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spells, a week or two in duration, occur, when the temperature will go down to -30° F. (and in some cases the thermometer has gone down to -50° F.) The river is generally affected by ice from December to March. Frazil ice is prevalent.

Gauge.—A vertical staff gauge, 12 feet long, is read daily by Mrs. C. Barnes, of Wardner.

Channel.—The channel is straight and uniform, but piles have been driven down the centre of the river for logging purposes.

Discharge Measurements.—One measurement in 1913, and nine in 1914, were made from the traffic bridge.

Accuracy.—Daily gauge readings are obtained, reliable measurements were made, and the gauge height discharge curve is very good. The results should be within 5 per cent.

General.—Kootenay river rises in the Beaverfoot range of the Rockies, in township 24, range 16, west 5th meridian, and flows in a south by southeasterly direction through Wardner, a distance of about 100 miles. The valley of the Kootenay is broad and fertile, and is gradually being opened for agricultural developments. The fall of the river is very gradual, and will not be used for power between Canal Flats and Wardner. The river is most suitable for logging, and each year drives come down from valuable limits at the headwaters.

DISCHARGE MEASUREMENTS of Kootenay River, near Wardner, for 1913-14.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge |
|---------|-----------------------|-----------|--------|------------------|----------------|---------------|--------------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1913 | | | | | | | |
| Nov. 23 | C. E. W., C. E. R. | 1,048 | 460 | 2,100 | 1.64 | 2.00 | 3,460 |
| 1914 | | | | | | | |
| May 19 | D. O. B. G., R. H. H. | 1,048 | 482 | 4,860 | 4.83 | 8.00 | 23,500 |
| June 7 | " " | 1,048 | 482 | 4,840 | 4.85 | 8.00 | 23,500 |
| " 15 | " " | 1,048 | 483 | 5,450 | 5.55 | 9.30 | 30,200 |
| " 20 | " " | 1,048 | 488 | 6,070 | 6.41 | 10.65 | 38,900 |
| July 25 | " " | 1,929 | 467 | 3,350 | 3.38 | 5.00 | 11,300 |
| " 31 | " " | 1,929 | 467 | 3,210 | 3.33 | 4.70 | 10,700 |
| Oct. 7 | " " | 1,929 | 464 | 2,490 | 2.08 | 2.95 | 5,210 |
| " 13 | " " | 1,929 | 465 | 2,469 | 2.11 | 2.88 | 5,180 |
| Dec. 13 | J. A. E., C. B. C. | 1,909 | 134 | 774 | 2.11 | 1.7 | 1,637 ¹ |

¹Ice conditions.

DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River, near Wardner, for 1914.

| DAY. | January. | | February. | | March. | | April. | | May. | | June. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-1 | 1,000 | 1-2 | 1,200 | 1-0 | 800 | 1-05 | 900 | 4-1 | 8,700 | 6-95 | 18,400 |
| 2 | 1-1 | 1,000 | 1-2 | 1,200 | 1-0 | 800 | 1-05 | 900 | 4-85 | 11,000 | 8-30 | 24,800 |
| 3 | 1-1 | 1,000 | 1-3 | 1,400 | 1-0 | 800 | 1-05 | 900 | 6-25 | 15,800 | 9-65 | 32,400 |
| 4 | 1-2 | 1,200 | 1-4 | 1,700 | 1-0 | 800 | 1-00 | 800 | 6-85 | 18,000 | 10-75 | 39,500 |
| 5 | | 1,200 | 1-4 | 1,700 | 1-0 | 800 | 1-0 | 800 | 6-3 | 15,900 | 11-25 | 43,000 |
| 6 | | 1,200 | | 1,700 | 1-0 | 800 | 1-1 | 1,000 | 5-75 | 14,000 | 9-25 | 30,000 |
| 7 | | 1,200 | | 1,700 | 0-9 | 600 | 1-3 | 1,400 | 5-40 | 12,600 | 8-20 | 24,300 |
| 8 | | 1,200 | | 1,700 | 1-0 | 800 | 1-75 | 2,600 | 5-07 | 11,600 | 8-40 | 25,300 |
| 9 | | 1,200 | | 1,700 | 1-0 | 800 | 1-8 | 2,700 | 5-47 | 12,900 | 7-35 | 20,200 |
| 10 | | 1,200 | | 1,700 | 1-0 | 800 | 1-9 | 2,900 | 6-10 | 15,200 | 6-50 | 16,600 |
| 11 | | 1,200 | | 1,700 | 1-0 | 800 | 2-0 | 3,200 | 6-3 | 15,900 | 6-35 | 16,000 |
| 12 | | 1,200 | | 1,700 | 1-0 | 800 | 2-15 | 3,600 | 6-3 | 15,900 | 6-80 | 17,800 |
| 13 | | 1,200 | | 1,700 | 0-95 | 700 | 2-5 | 4,400 | 6-3 | 15,900 | 7-45 | 20,600 |
| 14 | | 1,200 | | 1,700 | 0-95 | 700 | 2-85 | 5,300 | 6-65 | 17,200 | 8-4 | 25,300 |
| 15 | | 1,200 | | 1,700 | 1-00 | 800 | 2-97 | 5,610 | 7-52 | 21,000 | 9-35 | 30,600 |
| 16 | | 1,200 | | 1,700 | 1-10 | 1,000 | 3-25 | 6,400 | 8-2 | 24,300 | 9-9 | 33,800 |
| 17 | | 1,200 | | 1,700 | 1-10 | 1,000 | 3-32 | 6,540 | 8-32 | 24,900 | 10-42 | 37,200 |
| 18 | | 1,200 | | 1,700 | 1-10 | 1,000 | 3-2 | 6,300 | 8-4 | 25,300 | 10-77 | 39,600 |
| 19 | 1-2 | 1,200 | 1-3 | 1,400 | 1-10 | 1,000 | 3-15 | 6,150 | 8-07 | 23,600 | 11-02 | 41,300 |
| 20 | 1-2 | 1,200 | 1-2 | 1,200 | 1-05 | 900 | 3-72 | 7,560 | 7-65 | 21,600 | 10-65 | 38,800 |
| 21 | 1-2 | 1,200 | 1-3 | 1,400 | 1-05 | 900 | 4-0 | 8,400 | 7-3 | 20,000 | 9-58 | 32,000 |
| 22 | 1-1 | 1,000 | 1-3 | 1,400 | 1-05 | 900 | 3-82 | 7,860 | 7-15 | 19,400 | 8-4 | 25,300 |
| 23 | 1-1 | 1,000 | 1-1 | 1,000 | 1-05 | 900 | 3-7 | 7,500 | 7-37 | 20,300 | 7-45 | 20,600 |
| 24 | 1-0 | 800 | 1-0 | 800 | 1-05 | 900 | 3-7 | 7,500 | 7-55 | 21,200 | 6-87 | 18,100 |
| 25 | 0-9 | 600 | 1-0 | 800 | 1-05 | 900 | 3-8 | 7,800 | 7-8 | 22,300 | 6-7 | 17,400 |
| 26 | 1-0 | 800 | 1-0 | 800 | 1-05 | 900 | 3-85 | 7,950 | 7-85 | 22,600 | 7-42 | 20,500 |
| 27 | 1-1 | 1,000 | 1-0 | 800 | 1-05 | 900 | 3-80 | 7,800 | 7-3 | 20,000 | 7-42 | 20,500 |
| 28 | 1-1 | 1,000 | 1-0 | 800 | 1-05 | 900 | 3-80 | 7,800 | 6-85 | 18,000 | 7-27 | 19,900 |
| 29 | 1-1 | 1,000 | | | 1-05 | 900 | 3-70 | 7,500 | 6-3 | 15,900 | 7-32 | 20,100 |
| 30 | 1-1 | 1,000 | | | 1-05 | 900 | 3-70 | 7,500 | 5-97 | 14,700 | 7-60 | 21,400 |
| 31 | 1-2 | 1,200 | | | 1-05 | 900 | | | 6-10 | 15,200 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Kootenay River, near Wardner, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 7-9 | 22,700 | 4-70 | 10,500 | 2-98 | 5,640 | 3-22 | 6,340 | 2-92 | 5,460 | 2-05 | 3,350 |
| 2. | 8-4 | 25,300 | 4-85 | 11,000 | 2-88 | 5,360 | 3-17 | 6,210 | 3-4 | 6,700 | 1-92 | 2,960 |
| 3. | 8-8 | 27,400 | 4-82 | 10,900 | 2-82 | 5,240 | 3-22 | 6,340 | 3-37 | 6,640 | 1-95 | 3,050 |
| 4. | 9-07 | 29,000 | 4-72 | 10,600 | 2-85 | 5,300 | 3-22 | 6,340 | 3-27 | 6,440 | 1-97 | 3,110 |
| 5. | 9-27 | 30,200 | 4-67 | 10,400 | 2-85 | 5,300 | 3-12 | 6,060 | 3-23 | 6,360 | 1-90 | 2,900 |
| 6. | 9-15 | 29,500 | 4-45 | 9,750 | 2-85 | 5,300 | 3-02 | 5,760 | 3-39 | 6,680 | 1-85 | 2,800 |
| 7. | 8-88 | 27,900 | 4-35 | 9,450 | 2-72 | 5,040 | 2-95 | 5,550 | 3-25 | 6,400 | 1-80 | 2,700 |
| 8. | 8-42 | 25,400 | 4-45 | 9,750 | 2-70 | 5,000 | 2-92 | 5,460 | 3-02 | 5,760 | 1-75 | 2,600 |
| 9. | 8-07 | 23,600 | 4-25 | 9,150 | 2-75 | 5,100 | 2-88 | 5,360 | 2-92 | 5,460 | 1-75 | 2,600 |
| 10. | 7-8 | 22,300 | 3-97 | 8,310 | 2-70 | 5,000 | 2-92 | 5,460 | 2-8 | 5,200 | 1-67 | 2,440 |
| 11. | 7-55 | 21,200 | 3-80 | 7,800 | 2-62 | 4,760 | 2-95 | 5,550 | 2-77 | 5,140 | 1-45 | 1,850 |
| 12. | 7-40 | 20,400 | 3-80 | 7,800 | 2-55 | 4,550 | 2-95 | 5,550 | 2-3 | 5,200 | 1-50 | 2,000 |
| 13. | 7-52 | 21,000 | 3-75 | 7,650 | 2-65 | 4,850 | 2-87 | 5,340 | 2-77 | 5,140 | 1-07 | 940 |
| 14. | 8-00 | 23,300 | 3-72 | 7,560 | 2-58 | 4,640 | 2-82 | 5,240 | 2-7 | 5,000 | 1-02 | 840 |
| 15. | 7-97 | 23,000 | 3-72 | 7,560 | 2-50 | 4,400 | 2-82 | 5,240 | 2-5 | 4,400 | ..... | 1,000 |
| 16. | 7-67 | 21,800 | 3-7 | 7,500 | 2-55 | 4,550 | 2-90 | 5,400 | 2-3 | 3,900 | ..... | 1,160 |
| 17. | 6-87 | 18,100 | 3-7 | 7,500 | 2-53 | 4,490 | 2-90 | 5,400 | 2-15 | 3,600 | ..... | 1,320 |
| 18. | 6-35 | 16,000 | 3-67 | 7,410 | 2-65 | 4,850 | 2-95 | 5,550 | 2-12 | 3,540 | ..... | 1,480 |
| 19. | 6-32 | 16,000 | 3-53 | 7,060 | 3-00 | 5,700 | 3-12 | 6,060 | 2-35 | 4,000 | ..... | 1,640 |
| 20. | 6-27 | 15,800 | 3-4 | 6,700 | 3-60 | 7,200 | 3-25 | 6,400 | 2-2 | 3,700 | ..... | 1,600 |
| 21. | 6-32 | 16,000 | 3-4 | 6,700 | 3-55 | 7,100 | 3-15 | 6,150 | 2-2 | 3,700 | ..... | 1,600 |
| 22. | 5-9 | 14,400 | 3-37 | 6,640 | 3-32 | 6,540 | 3-00 | 5,700 | 2-3 | 3,900 | ..... | 1,600 |
| 23. | 5-35 | 12,400 | 3-40 | 6,700 | 3-17 | 6,210 | 2-90 | 5,400 | 2-3 | 3,900 | ..... | 1,600 |
| 24. | 5-05 | 11,600 | 3-3 | 6,500 | 3-02 | 5,760 | 2-77 | 5,140 | 2-3 | 3,900 | ..... | 1,600 |
| 25. | 5-00 | 11,400 | 3-22 | 6,340 | 3-12 | 6,060 | 2-72 | 5,040 | 2-25 | 3,800 | ..... | 1,600 |
| 26. | 5-05 | 11,600 | 3-1 | 6,000 | 3-25 | 6,400 | 2-73 | 5,060 | 2-2 | 3,700 | ..... | 1,600 |
| 27. | 4-92 | 11,200 | 3-07 | 5,910 | 3-42 | 6,760 | 2-65 | 4,850 | 2-22 | 3,740 | ..... | 1,600 |
| 28. | 4-87 | 11,000 | 3-05 | 5,850 | 3-67 | 7,410 | 2-60 | 4,700 | 2-2 | 3,700 | ..... | 1,600 |
| 29. | 4-85 | 11,000 | 3-00 | 5,700 | 3-65 | 7,350 | 2-60 | 4,700 | 2-2 | 3,700 | ..... | 1,600 |
| 30. | 4-77 | 10,700 | 2-98 | 5,640 | 3-42 | 6,760 | 2-60 | 4,700 | 2-17 | 3,640 | ..... | 1,600 |
| 31. | 4-70 | 10,500 | 3-08 | 5,940 | ..... | ..... | 2-62 | 4,760 | ..... | ..... | ..... | 1,600 |

MONTHLY DISCHARGE of Kootenay River, near Wardner, for 1914.

(Drainage area, 5,200 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy |
|-----------|---------------------------|----------|--------|------------------|-----------------------------------|--------------------|----------|
| | Maximum. | Minimum. | Mean. | Per Square Mile. | Depth in inches on Drainage Area. | Total in Acre-feet | |
| January | 1,200 | 600 | 1,100 | 0-21 | 0-24 | 67,600 | |
| February | 1,700 | 800 | 1,420 | 0-27 | 0-28 | 78,900 | |
| March | 1,000 | 600 | 852 | 0-16 | 0-18 | 52,400 | B |
| April | 8,400 | 800 | 4,920 | 0-95 | 1-06 | 293,000 | B |
| May | 25,300 | 8,700 | 18,100 | 3-48 | 4-01 | 1,110,000 | A |
| June | 43,000 | 17,400 | 26,400 | 5-08 | 5-67 | 1,570,000 | A |
| July | 30,200 | 10,500 | 19,100 | 3-67 | 4-23 | 1,170,000 | A |
| August | 11,000 | 5,610 | 7,820 | 1-50 | 1-73 | 481,000 | A |
| September | 7,410 | 4,400 | 5,620 | 1-08 | 1-20 | 334,000 | A |
| October | 6,400 | 4,700 | 5,510 | 1-06 | 1-22 | 339,000 | A |
| November | 6,700 | 3,540 | 4,750 | 0-91 | 1-02 | 283,000 | A |
| December | 3,350 | 810 | 1,940 | 0-37 | 0-43 | 119,000 | |

LINKLATER CREEK, NEAR NEWGATE (3045).

Location.—At Smith's ranch, 6 miles north of international boundary line; at Newgate, 4 miles from mouth of Gold creek. Cranbrook district.

Records Available.—May to September, 1913.

Climatic Conditions.—The precipitation is light, generally not in excess of 20 inches. The summers are hot and dry. Winters are severe, during some cold spells the thermometer going down to -40° F.

Gauge.—Three-foot vertical staff gauge, nailed to bridge. Mr. Jas. Bean reads gauge daily.

Channel.—Moderately swift, fairly smooth, and unbroken.

Discharge Measurements.—Five well-distributed measurements were made in 1914.

Co-operation.—This station was maintained by co-operation between the Provincial Water Rights Branch and the British Columbia Hydrographic Survey.

Accuracy.—Daily gauge readings are obtained, the measurements should be accurate. The results are within 15 per cent.

General.—Linklater creek is a small irrigation stream, about 15 miles long, flowing from the northwest into Kootenay river near Newgate. The drainage area is about 40 square miles (as obtained from the only available maps.)

DISCHARGE MEASUREMENTS of Linklater Creek, near Smith's ranch, Gateway, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-----------|-----------------------|-----------|---------|------------------|----------------|---------------|------------|
| | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. | |
| 1914. | | | | | | | |
| May 17. | D. O. B. G., R. H. H. | 1,048 | 20-0 | 30-0 | 3-30 | 1-30 | 99-0 |
| June 18. | " H. D. H. | 1,048 | 20-0 | 21-5 | 2-66 | 0-85 | 57-1 |
| July 11. | R. H. H. (Prov.) | | 20-0 | 13-0 | 1-66 | 0-50 | 21-7 |
| July 28. | D. O. B. G., R. H. H. | 1,909 | 20-0 | 10-6 | 1-35 | 0-40 | 14-3 |
| Sept. 11. | H. B. H. (Prov.) | | | 8-70 | 1-41 | 0-30 | 12-3 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Linklater Creek, near Gateway, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 0.6 | 30.0 | 1.1 | 77.0 | 0.60 | 30.0 | 0.33 | 12.8 | 0.28 | 10.9 |
| 2. | 0.8 | 45.0 | 1.3 | 96.0 | 0.55 | 26.0 | 0.33 | 12.8 | 0.28 | 10.9 |
| 3. | 1.0 | 67.0 | 1.35 | 100.0 | 0.55 | 26.0 | 0.32 | 12.4 | 0.28 | 10.9 |
| 4. | 0.9 | 58.0 | 1.25 | 91.0 | 0.55 | 26.0 | 0.32 | 12.4 | 0.28 | 10.9 |
| 5. | 0.75 | 43.5 | 1.1 | 77.0 | 0.63 | 32.7 | 0.32 | 12.4 | 0.29 | 11.2 |
| 6. | 0.70 | 39.0 | 1.0 | 67.0 | 0.55 | 26.0 | 0.32 | 12.4 | 0.29 | 11.2 |
| 7. | 0.75 | 43.5 | 0.85 | 53.0 | 0.50 | 22.0 | 0.32 | 12.4 | 0.29 | 11.2 |
| 8. | 0.70 | 39.0 | 0.8 | 48.0 | 0.50 | 22.0 | 0.33 | 12.8 | 0.30 | 11.5 |
| 9. | 0.90 | 58.0 | 0.75 | 43.5 | 0.47 | 20.2 | 0.34 | 13.3 | 0.30 | 11.5 |
| 10. | 0.90 | 58.0 | 0.75 | 43.5 | 0.45 | 19.0 | 0.32 | 12.4 | 0.30 | 11.5 |
| 11. | 0.85 | 53.0 | 0.75 | 43.5 | 0.45 | 19.0 | 0.31 | 12.0 | 0.30 | 11.5 |
| 12. | 0.85 | 53.0 | 0.85 | 53.0 | 0.45 | 19.0 | 0.30 | 11.5 | 0.30 | 11.5 |
| 13. | 0.85 | 53.0 | 0.9 | 58.0 | 0.50 | 22.0 | 0.30 | 11.5 | 0.30 | 11.5 |
| 14. | 1.0 | 67.0 | 0.9 | 58.0 | 0.45 | 19.0 | 0.29 | 11.2 | 0.30 | 11.5 |
| 15. | 1.2 | 86.0 | 0.9 | 58.0 | 0.45 | 19.0 | 0.28 | 10.9 | 0.30 | 11.5 |
| 16. | 1.25 | 91.0 | 0.9 | 58.0 | 0.40 | 16.0 | 0.28 | 10.9 | 0.31 | 12.0 |
| 17. | 1.3 | 96.0 | 0.9 | 58.0 | 0.40 | 16.0 | 0.55 | 26.0 | 0.34 | 13.3 |
| 18. | 1.2 | 86.0 | 0.85 | 53.0 | 0.40 | 16.0 | 0.45 | 19.0 | 0.37 | 14.6 |
| 19. | 1.2 | 86.0 | 0.80 | 48.0 | 0.40 | 16.0 | 0.35 | 13.8 | 0.40 | 16.0 |
| 20. | 1.1 | 77.0 | 0.75 | 43.5 | 0.40 | 16.0 | 0.33 | 12.8 | 0.40 | 16.0 |
| 21. | 1.05 | 72.0 | 0.73 | 41.7 | 0.40 | 16.0 | 0.35 | 13.8 | 0.37 | 14.6 |
| 22. | 1.1 | 77.0 | 0.65 | 34.5 | 0.38 | 15.1 | 0.33 | 12.8 | 0.32 | 12.4 |
| 23. | 1.15 | 81.5 | 0.70 | 39.0 | 0.37 | 14.6 | 0.30 | 11.5 | 0.31 | 12.0 |
| 24. | 1.2 | 86.0 | 0.75 | 43.5 | 0.37 | 14.6 | 0.35 | 13.8 | 0.30 | 11.5 |
| 25. | 1.25 | 91.0 | 0.92 | 59.8 | 0.38 | 15.1 | 0.30 | 11.5 | 0.30 | 11.5 |
| 26. | 1.1 | 77.0 | 0.80 | 48.0 | 0.38 | 15.1 | 0.30 | 11.5 | 0.29 | 11.2 |
| 27. | 0.95 | 62.5 | 0.70 | 39.0 | 0.37 | 14.6 | 0.29 | 11.2 | 0.29 | 11.2 |
| 28. | 0.9 | 58.0 | 0.70 | 39.0 | 0.35 | 13.8 | 0.29 | 11.2 | 0.30 | 11.5 |
| 29. | 0.85 | 53.0 | 0.65 | 34.5 | 0.35 | 13.8 | 0.29 | 11.2 | 0.30 | 11.5 |
| 30. | 0.95 | 62.5 | 0.60 | 30.0 | 0.35 | 13.8 | 0.29 | 11.2 | 0.30 | 11.5 |
| 31. | 1.0 | 67.0 | | | 0.33 | 12.8 | 0.29 | 11.2 | | |

MONTHLY DISCHARGE of Linklater Creek, near Newgate, for 1914.

(Drainage area 42 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET | | | | RUN-OFF | |
|-----------|--------------------------|----------|-------|-----------------|----------------------------------|--------------------|
| | Maximum. | Minimum. | Mean. | Per square mile | Depth in inches on Drainage area | Total in acre-feet |
| May | 96 | 30 | 65.5 | 1.56 | 1.80 | 4,030 |
| June | 106 | 30 | 54.4 | 1.30 | 1.45 | 3,240 |
| July | 32.7 | 12.8 | 19.0 | 0.45 | 0.52 | 1,170 |
| August | 26.0 | 11.2 | 12.8 | 0.30 | 0.35 | 787 |
| September | 15.0 | 10.9 | 12.0 | 0.29 | 0.32 | 714 |

Accuracy "C."

MARK CREEK, NEAR MARYSVILLE (3037).

Location.—At the mouth of the creek near Marysville, about 14 miles from Cranbrook. Cranbrook district.

Records Available.—May to December, 1914.

25E—34½

Climatic Conditions.—At Marysville the precipitation each year is a little greater than at Cranbrook, which in 1914 was 16 inches. The summers are hot and dry. The winters are severe. Cold spells lasting for a week or so often occur, when the thermometer may reach -40° F. and -50° F. The creek freezes over in November or December and remains frozen till March. Frazil ice is present.

Gauge.—An enamel gauge, 6 feet long, is read daily by Mr. W. M. Burdette, of Marysville.

Channel.—Straight, rocky, and water is generally broken. The section may fill but the control appears permanent.

Discharge Measurements.—Eight well-distributed measurements were made in 1914.

Co-operation.—This station was maintained by co-operation between the British Columbia Hydrographic Survey and the Water Rights Branch of the province.

Accuracy.—The measurements are fair, daily readings are obtained, and the gauge heights discharge curve seems very good. The results should be within 10 per cent.

General.—Mark creek is a stream about 15 or 20 miles long, flowing from the northwest into St. Mary's river near Marysville. The drainage area is about 90 square miles (as estimated from the only available maps). Near Kimberley is the Sullivan mine, where large quantities of silver-lead ore is mined and shipped to Trail smelter. This company has a water-power development on Mark creek. At present about 350 horse-power is developed during the summer months. The head it is anticipated, will soon be increased.

There are other valuable mining claims in Mark creek drainage which, when developed, may tend to increase the importance of this little stream.

DISCHARGE MEASUREMENTS of Mark Creek, near Marysville, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 1..... | H. B. H. & C. E. R..... | 1,048 | 20 | 41.4 | 2.66 | 1.68 | 110 |
| May 28..... | D. O' B. G..... | 1,530 | 25 | 57.9 | 4.08 | 2.2 | 236 |
| July 3..... | H. B. H. (Prov.)..... | ..... | 24 | 55.4 | 4.02 | 2.1 | 223 |
| July 24..... | D. O' B. G., H. B. H..... | 1,929 | 16 | 34.1 | 1.92 | 1.4 | 56.4 |
| Sept. 1..... | H. B. H. (Prov.)..... | ..... | ..... | 22.2 | .77 | 1.00 | 17.2 |
| Sept. 29..... | "..... | | | 26.2 | 1.05 | 1.20 | 27.4 |
| Oct. 10..... | D. O. B. G..... | 1,929 | 19.5 | 28.4 | 0.86 | 1.125 | 24.2 |
| Oct. 16..... | "..... | 1,929 | 19.5 | 29.4 | 0.99 | 1.22 | 29.1 |

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DAILY GAUGE HEIGHT AND DISCHARGE of Mark Creek, at Marysville, B.C.,
for 1914.

| DAY. | May. | | June. | |
|---------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 1-70 | 112 | 2-56 | 354 |
| 2..... | 1-85 | 171 | 2-76 | 428 |
| 3..... | 2-10 | 210 | 3-01 | 527 |
| 4..... | 2-0 | 184 | 2-90 | 483 |
| 5..... | 1-9 | 158 | 2-56 | 354 |
| 6..... | 1-81 | 136 | 2-41 | 303 |
| 7..... | 1-71 | 114 | 2-14 | 221 |
| 8..... | 1-75 | 123 | 2-05 | 197 |
| 9..... | 2-0 | 184 | 2-00 | 184 |
| 10..... | 1-99 | 181 | 1-96 | 174 |
| 11..... | 1-98 | 179 | 1-94 | 168 |
| 12..... | 2-01 | 187 | 1-98 | 179 |
| 13..... | 2-08 | 205 | 2-08 | 205 |
| 14..... | 2-24 | 250 | 2-41 | 303 |
| 15..... | 2-48 | 325 | 2-52 | 339 |
| 16..... | 2-59 | 364 | 2-63 | 379 |
| 17..... | 2-6 | 368 | 2-69 | 401 |
| 18..... | 2-54 | 346 | 2-67 | 394 |
| 19..... | 2-47 | 322 | 2-55 | 350 |
| 20..... | 2-38 | 293 | 2-33 | 277 |
| 21..... | 2-37 | 290 | 2-13 | 218 |
| 22..... | 2-36 | 286 | 1-96 | 174 |
| 23..... | 2-37 | 290 | 1-86 | 148 |
| 24..... | 2-43 | 310 | 1-79 | 132 |
| 25..... | 2-38 | 293 | 2-05 | 197 |
| 26..... | 2-45 | 316 | 2-23 | 247 |
| 27..... | 2-37 | 290 | 2-05 | 197 |
| 28..... | 2-22 | 244 | 2-00 | 184 |
| 29..... | 2-08 | 205 | 2-00 | 184 |
| 30..... | 2-10 | 210 | 2-00 | 184 |
| 31..... | 2-25 | 253 | .. | .. |

DAILY GAUGE HEIGHT AND DISCHARGE of Mark Creek, at Marysville, B.C.,
for 1914—*Concluded.*

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | 2-02 | 189 | 1-27 | 38-1 | 1-07 | 17-9 | 1-12 | 21-8 | 1-20 | 29-0 | 1-22 | 31-6 |
| 2. | 2-08 | 206 | 1-2 | 29-0 | 1-07 | 17-9 | 1-14 | 23-6 | 1-27 | 38-1 | 1-17 | 26-3 |
| 3. | 2-12 | 215 | 1-2 | 29-0 | 1-07 | 17-9 | 1-18 | 27-2 | 1-20 | 29-0 | 1-20 | 29-0 |
| 4. | 2-11 | 213 | 1-18 | 27-2 | 1-07 | 17-9 | 1-19 | 28-1 | 1-23 | 32-9 | 1-26 | 36-8 |
| 5. | 2-14 | 221 | 1-18 | 27-2 | 1-04 | 15-8 | 1-19 | 28-1 | 1-26 | 36-8 | 1-23 | 32-9 |
| 6. | 2-02 | 189 | 1-18 | 27-2 | 1-04 | 15-8 | 1-19 | 28-1 | 1-25 | 35-5 | 1-19 | 28-1 |
| 7. | 1-9 | 158 | 1-16 | 25-4 | 1-08 | 18-6 | 1-19 | 28-1 | 1-21 | 30-3 | 1-12 | 21-8 |
| 8. | 1-82 | 139 | 1-18 | 27-2 | 1-10 | 20-0 | 1-16 | 25-4 | 1-21 | 30-3 | 1-56 | 21-0 |
| 9. | 1-77 | 128 | 1-12 | 21-8 | 1-08 | 18-6 | 1-16 | 25-4 | 1-23 | 32-9 | 2-10 | 20-0 |
| 10. | 1-72 | 116 | 1-17 | 26-3 | 1-08 | 18-6 | 1-18 | 27-2 | 1-18 | 27-2 | 2-25 | 20-0 |
| 11. | 1-69 | 110 | 1-17 | 26-3 | 1-08 | 18-6 | 1-18 | 27-2 | 1-19 | 28-1 | 2-45 | 19-0 |
| 12. | 1-65 | 102 | 1-17 | 26-3 | 1-08 | 18-6 | 1-20 | 29-0 | 1-17 | 26-3 | 2-50 | 18-0 |
| 13. | 1-77 | 127 | 1-16 | 25-4 | 1-06 | 17-2 | 1-17 | 26-3 | 1-16 | 25-4 | 2-55 | 17-0 |
| 14. | 1-84 | 144 | 1-12 | 21-8 | 1-06 | 17-2 | 1-17 | 26-3 | 1-15 | 24-5 | 2-60 | 16-0 |
| 15. | 1-67 | 106 | 1-13 | 22-7 | 1-09 | 19-3 | 1-20 | 29-0 | 1-15 | 24-5 | Frozen | 15-3 |
| 16. | 1-60 | 92-0 | 1-13 | 22-7 | 1-12 | 21-8 | 1-20 | 29-0 | 1-15 | 24-5 | ..... | 15-0 |
| 17. | 1-53 | 78-7 | 1-16 | 25-4 | 1-06 | 17-6 | 1-15 | 24-5 | 1-17 | 26-3 | ..... | 15-0 |
| 18. | 1-50 | 73-0 | 1-17 | 26-3 | 1-10 | 20-0 | 1-18 | 27-2 | 1-17 | 26-3 | ..... | 15-0 |
| 19. | 1-42 | 59-4 | 1-12 | 21-8 | 1-19 | 28-1 | 1-23 | 32-9 | 1-18 | 27-2 | ..... | 15-0 |
| 20. | 1-45 | 64-5 | 1-13 | 22-7 | 1-18 | 27-2 | 1-24 | 34-2 | 1-20 | 29-0 | ..... | 16-0 |
| 21. | 1-41 | 57-7 | 1-11 | 20-9 | 1-15 | 24-5 | 1-22 | 31-6 | 1-20 | 29-0 | ..... | 16-0 |
| 22. | 1-40 | 56-0 | 1-10 | 20-0 | 1-10 | 20-0 | 1-18 | 27-2 | 1-17 | 26-3 | ..... | 17-0 |
| 23. | 1-40 | 56-0 | 1-08 | 18-6 | 1-11 | 20-9 | 1-16 | 25-4 | 1-20 | 29-0 | ..... | 17-0 |
| 24. | 1-37 | 51-8 | 1-08 | 18-6 | 1-11 | 20-9 | 1-16 | 25-4 | 1-20 | 29-0 | ..... | 18-0 |
| 25. | 1-32 | 44-8 | 1-08 | 18-6 | 1-14 | 23-6 | 1-11 | 20-9 | 1-21 | 30-3 | ..... | 18-0 |
| 26. | 1-35 | 49-0 | 1-08 | 18-6 | 1-19 | 28-1 | 1-16 | 25-4 | 1-20 | 29-0 | ..... | 18-0 |
| 27. | 1-34 | 47-6 | 1-08 | 18-6 | 1-19 | 28-1 | 1-20 | 29-0 | 1-18 | 27-2 | ..... | 18-0 |
| 28. | 1-31 | 43-4 | 1-07 | 17-9 | 1-19 | 28-1 | 1-20 | 29-0 | 1-17 | 26-3 | ..... | 18-0 |
| 29. | 1-30 | 42-0 | 1-07 | 17-9 | 1-16 | 25-4 | 1-20 | 29-0 | 1-16 | 25-4 | ..... | 18-6 |
| 30. | 1-29 | 40-7 | 1-07 | 17-9 | 1-15 | 25-4 | 1-20 | 29-0 | 1-21 | 30-3 | ..... | 18-0 |
| 31. | 1-26 | 36-8 | 1-07 | 17-9 | ..... | ..... | 1-20 | 29-0 | ..... | ..... | ..... | 18-0 |

MONTHLY DISCHARGE of Mark Creek, at Marysville, B.C., for 1914.

Drainage area 90 square miles.

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| May. | 368 | 112 | 238 | 2-64 | 3-04 | 14,600 | B |
| June | 527 | 132 | 270 | 3-0 | 3-55 | 10,100 | " |
| July | 221 | 36-8 | 105 | 1-17 | 1-35 | 6,460 | " |
| August | 38-1 | 17-9 | 23-4 | 0-26 | 0-30 | 1,440 | " |
| September | 20-1 | 15-8 | 21-0 | 0-23 | 0-26 | 1,250 | " |
| October | 34-2 | 21-8 | 27-4 | 0-30 | 0-35 | 1,680 | " |
| November | 38-1 | 24-5 | 28-9 | 0-32 | 0-36 | 1,720 | " |
| December | 36-8 | ..... | 20-1 | 0-22 | 0-23 | 1,240 | ..... |

MUD CREEK, NEAR ELKO (3044).

Location.—Two and one-half miles above Rock creek mill, near Elko. Cranbrook district.

Records Available.—June to September, 1914.

Climatic Conditions.—Similar to Elko. (See Elk river.)

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Gauge.—Three-foot enamel gauge, nailed to an old bridge, about one-half mile above Rock Creek mill. Read four or five times a week by Mr. H. B. Stiven, of Elko.

Channel.—Sluggish. Not very uniform.

Discharge Measurements.—Four measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Not guaranteed.

General.—Mud creek is a small irrigation stream, tributary to Rock creek, near Elko. The discharge of Mud creek, plus that of Rock creek, gives the discharge of Rock creek at the Rock Creek Lumber Company's dam.

DISCHARGE MEASUREMENTS of Mud Creek, near Baynes, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-----------|-------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 18 | D. O'B. G., R. H. H... | 1,048 | 8.5 | 10.0 | 2.27 | 2.05 | 22.7 |
| July 12 | R. H. H. (Prov.) | ..... | 8.1 | 8.9 | 1.94 | 1.70 | 17.3 |
| " 29 | D. O'B. G., R. H. H.... | 1,929 | 8.1 | 7.9 | 1.50 | 1.40 | 11.9 |
| Sept. 14. | H. B. H. (Prov.) | ..... | ..... | 7.13 | 1.22 | 1.20 | 8.68 |

DAILY GAUGE HEIGHT AND DISCHARGE of Mud Creek, near Elko, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | | 22.8 | 1.8 | 18.4 | | 11.8 | 1.20 | 8.7 |
| 2 | | | 2.1 | 23.7 | | 17.6 | 1.4 | 11.8 | | 8.4 |
| 3 | | | 2.1 | 23.7 | 1.7 | 16.7 | 1.35 | 11.0 | 1.15 | 8.0 |
| 4 | | | 2.1 | 23.7 | 1.8 | 18.4 | | 11.0 | 1.15 | 8.0 |
| 5 | | | | 24.2 | | 18.4 | 1.35 | 11.0 | 1.15 | 8.0 |
| 6 | | | 2.15 | 24.6 | 1.8 | 18.4 | | 10.6 | 1.15 | 8.0 |
| 7 | | | | 24.6 | | 17.6 | 1.3 | 10.2 | | 8.0 |
| 8 | | | 2.15 | 24.6 | 1.7 | 16.7 | 1.3 | 10.2 | 1.15 | 8.0 |
| 9 | | | | 24.1 | | 17.6 | | 10.2 | | 8.0 |
| 10 | | | 2.1 | 23.7 | 1.8 | 18.4 | 1.3 | 10.2 | 1.15 | 8.0 |
| 11 | | | 2.1 | 23.7 | 1.6 | 15.0 | | 9.8 | | 8.0 |
| 12 | | | 2.0 | 21.0 | 1.65 | 15.8 | 1.25 | 9.4 | 1.15 | 8.0 |
| 13 | | | 1.95 | 21.0 | | 15.4 | | 9.4 | 1.15 | 8.0 |
| 14 | | | 1.95 | 21.0 | 1.6 | 15.0 | 1.25 | 9.4 | | 8.4 |
| 15 | | | | 21.0 | | 14.6 | 1.25 | 9.4 | 1.20 | 8.7 |
| 16 | | | 1.95 | 21.0 | 1.55 | 14.2 | 1.25 | 9.4 | | 8.7 |
| 17 | | | 1.95 | 21.0 | | 14.6 | | 9.4 | 1.20 | 8.7 |
| 18 | 2.05 | 22.8 | | 21.4 | 1.6 | 15.0 | 1.25 | 9.4 | | 9.0 |
| 19 | 2.1 | 23.7 | 2.0 | 21.9 | | 14.6 | | 9.4 | 1.25 | 9.4 |
| 20 | 2.1 | 23.7 | 2.0 | 21.9 | 1.55 | 14.2 | 1.25 | 9.4 | 1.25 | 9.4 |
| 21 | | 23.2 | | 15.6 | | 13.8 | | 9.0 | 1.25 | 9.4 |
| 22 | 2.05 | 22.8 | 1.25 | 9.4 | 1.5 | 13.4 | 1.2 | 8.7 | | 9.4 |
| 23 | | 22.8 | | 9.0 | | 13.4 | | 8.7 | 1.25 | 9.4 |
| 24 | 2.05 | 22.8 | 1.2 | 8.7 | 1.5 | 13.4 | 1.2 | 8.7 | | 9.4 |
| 25 | | 22.8 | | 8.4 | 1.55 | 14.2 | | 8.7 | 1.25 | 9.4 |
| 26 | 2.05 | 22.8 | 1.15 | 8.0 | 1.5 | 13.4 | 1.2 | 8.7 | 1.30 | 10.2 |
| 27 | | 23.7 | 1.3 | 10.2 | | 13.0 | | 8.7 | 1.30 | 10.2 |
| 28 | 2.15 | 21.4 | 1.0 | 20.1 | 1.45 | 12.6 | 1.2 | 8.7 | 1.30 | 10.2 |
| 29 | | 21.1 | 2.0 | 21.9 | | 12.2 | 1.2 | 8.7 | | 10.2 |
| 30 | 2.1 | 23.7 | 1.8 | 18.4 | 1.4 | 11.8 | | 8.7 | 1.30 | 10.2 |
| 31. | 2.0 | 21.0 | | | 1.4 | 11.8 | | 8.7 | | |

6 GEORGE V, A. 1916

MONTHLY DISCHARGE of Mud Creek, near Elko, for 1914.

(Drainage area, 7 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| June..... | 24.6 | 8.0 | 19.5 | 2.78 | 3.10 | 1,160 |
| July..... | 18.4 | 11.8 | 15.1 | 2.15 | 2.48 | 928 |
| August..... | 11.8 | 8.7 | 9.62 | 1.37 | 1.58 | 596 |
| September..... | 10.2 | 8.0 | 8.84 | 1.26 | 1.41 | 526 |

PHILLIPS CREEK, NEAR ROOSVILLE (3046).

Location.—Fifteen hundred feet above road, near Roo's ranch, Roosville. Cranbrook district.

Records Available.—May to November, 1914.

Climatic Conditions.—Summers, hot and dry. Winters severe, as low as -40° F. during cold spells some seasons. Similar to Elko (see Elk river).

Gauge.—Wooden staff gauge, read by Mr. Fred Roo, of Roosville.

Channel.—Fairly uniform and smooth. Good control.

Discharge Measurements.—Five measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated during 1914.

Accuracy.—Daily gauge readings and fairly good measurements. Results should be within 15 per cent.

General.—Phillips creek is a small stream about 10 to 15 miles long, flowing from the east into Montana, about 4 miles from the mouth, and thence into Kootenay river. It is used for irrigation, and there is a fall on the creek above Roo's ranch, where a small industrial development might be installed.

DISCHARGE MEASUREMENTS of Phillips Creek, near Roosville, B.C., for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|--------------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May 16..... | D. O'B. G., R. H. H..... | 1,048 | 16.5 | 23.3 | 3.36 | 1.80 | 78.4 |
| June 17..... | D. O'B. G., H. B. H..... | 1,048 | 14.0 | 23.65 | 4.06 | 1.85 | 96.1 |
| July 10..... | R. H. H. (Prov.)..... | ..... | 13.0 | 14.6 | 2.21 | 1.40 | 32.2 |
| " 27..... | D. O'B. G., R. H. H..... | 1,929 | 11.0 | 13.3 | 1.35 | 1.20 | 18.0 |
| Sept. 10..... | H. B. H. (Prov.)..... | ..... | ..... | 11.6 | 1.00 | 1.10 | 12.7 |

SESSIONAL PAPER No. 25a

DAILY GAUGE HEIGHT AND DISCHARGE of Phillips Creek, near Rossville,
for 1914.

| DAY | April. | | May | | June. | |
|-----|-----------------|----------------|-----------------|----------------|-----------------|----------------|
| | Gauge Height | Dis- charge | Gauge Height | Dis- charge | Gauge Height | Dis- charge |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | | | 1.4 | 33.0 | 1.15 | 115.0 |
| 2 | | | 1.55 | 47.5 | 1.5 | 150.0 |
| 3 | | | 1.4 | 33.0 | 1.1 | 106.0 |
| 4 | | | 1.4 | 33.0 | 1.15 | 115.0 |
| 5 | | | 1.55 | 47.5 | 1.3 | 130.0 |
| 6 | | | | | | |
| 7 | | | 1.55 | 47.5 | 1.3 | 130.0 |
| 8 | | | 1.5 | 42.0 | 1.3 | 130.0 |
| 9 | | | 1.55 | 47.5 | 1.4 | 140.0 |
| 10 | | | 1.65 | 58.5 | 1.4 | 140.0 |
| 11 | | | | | | |
| 12 | | | 1.65 | 58.5 | 1.7 | 160.0 |
| 13 | | | 1.65 | 58.5 | 1.7 | 160.0 |
| 14 | | | 1.7 | 64.0 | 1.75 | 175.0 |
| 15 | | | 1.4 | 33.0 | 1.45 | 145.0 |
| 16 | | | | | | |
| 17 | | | 1.4 | 33.0 | 1.4 | 140.0 |
| 18 | | | 1.3 | 31.0 | 1.45 | 145.0 |
| 19 | | | 1.45 | 38.5 | 1.4 | 140.0 |
| 20 | | | 1.4 | 33.0 | 1.7 | 160.0 |
| 21 | | | | | | |
| 22 | | | 1.4 | 33.0 | 1.7 | 160.0 |
| 23 | | | 1.4 | 33.0 | 1.4 | 140.0 |
| 24 | | | 1.3 | 31.0 | 1.4 | 140.0 |
| 25 | | | 1.0 | 26.0 | 1.15 | 115.0 |
| 26 | | | | | | |
| 27 | | | 1.3 | 31.0 | 1.4 | 140.0 |
| 28 | | | 1.45 | 38.5 | 1.4 | 140.0 |
| 29 | | | 1.45 | 38.5 | 1.45 | 145.0 |
| 30 | | | 1.4 | 33.0 | 1.4 | 140.0 |
| 31 | | | | | | |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Phillips Creek, near Roosville, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | |
|------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|-------------|
| | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge | Gauge Height | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-6 | 53-0 | 1-2 | 18-0 | 1-10 | 12-0 | 1-15 | 15-0 | 1-3 | 25-0 |
| 2 | 1-6 | 53-0 | 1-2 | 18-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-3 | 25-0 |
| 3 | 1-55 | 47-5 | 1-2 | 18-0 | 1-10 | 12-0 | 1-15 | 15-0 | 1-35 | 29-0 |
| 4 | 1-55 | 47-5 | 1-2 | 18-0 | 1-10 | 12-0 | 1-2 | 18-0 | 1-35 | 29-0 |
| 5 | 1-6 | 53-0 | 1-2 | 18-0 | 1-10 | 12-0 | 1-2 | 18-0 | 1-35 | 29-0 |
| 6 | 1-55 | 47-5 | 1-2 | 18-0 | 1-15 | 15-0 | 1-2 | 18-0 | 1-35 | 29-0 |
| 7 | 1-55 | 47-5 | 1-2 | 18-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-35 | 29-0 |
| 8 | 1-5 | 42-0 | 1-2 | 18-0 | 1-1 | 12-0 | 1-15 | 15-0 | 1-35 | 29-0 |
| 9 | 1-5 | 42-0 | 1-2 | 18-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-3 | 25-0 |
| 10 | 1-5 | 42-0 | 1-2 | 18-0 | 1-1 | 12-0 | 1-15 | 15-0 | 1-3 | 25-0 |
| 11 | 1-4 | 33-0 | 1-15 | 15-0 | 1-1 | 12-0 | 1-2 | 18-0 | 1-3 | 25-0 |
| 12 | 1-4 | 33-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-2 | 18-0 | 1-3 | 25-0 |
| 13 | 1-45 | 37-5 | 1-15 | 15-0 | 1-15 | 15-0 | 1-2 | 18-0 | 1-3 | 25-0 |
| 14 | 1-4 | 33-0 | 1-15 | 15-0 | 1-10 | 12-0 | 1-2 | 18-0 | 1-3 | 25-0 |
| 15 | 1-4 | 33-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-2 | 18-0 | 1-3 | 25-0 |
| 16 | 1-4 | 33-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-25 | 21-5 | 1-3 | 25-0 |
| 17 | 1-4 | 33-0 | 1-4 | 33-0 | 1-15 | 15-0 | 1-3 | 25-0 | 1-3 | 25-0 |
| 18 | 1-35 | 29-0 | 1-25 | 21-5 | 1-15 | 15-0 | 1-3 | 25-0 | 1-3 | 25-0 |
| 19 | 1-35 | 29-0 | 1-25 | 21-5 | 1-20 | 18-0 | 1-3 | 25-0 | 1-25 | 21-5 |
| 20 | 1-35 | 29-0 | 1-15 | 15-0 | 1-20 | 18-0 | 1-3 | 25-0 | 1-25 | 21-5 |
| 21 | 1-3 | 25-0 | 1-2 | 18-0 | 1-15 | 15-0 | 1-3 | 25-0 | 1-2 | 18-0 |
| 22 | 1-3 | 25-0 | 1-2 | 18-0 | 1-15 | 15-0 | 1-25 | 21-5 | 1-2 | 18-0 |
| 23 | 1-3 | 25-0 | 1-2 | 18-0 | 1-15 | 15-0 | 1-25 | 21-5 | 1-2 | 18-0 |
| 24 | 1-3 | 25-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-25 | 21-5 | 1-2 | 18-0 |
| 25 | 1-3 | 25-0 | 1-15 | 15-0 | 1-15 | 15-0 | 1-25 | 21-5 | 1-2 | 18-0 |
| 26 | 1-25 | 21-5 | 1-15 | 15-0 | 1-15 | 15-0 | 1-20 | 18-0 | 1-2 | 18-0 |
| 27 | 1-25 | 21-5 | 1-15 | 15-0 | 1-10 | 12-0 | 1-20 | 18-0 | 1-2 | 18-0 |
| 28 | 1-25 | 21-5 | 1-15 | 15-0 | 1-10 | 12-0 | 1-20 | 18-0 | 1-2 | 18-0 |
| 29 | 1-25 | 21-5 | 1-10 | 12-0 | 1-10 | 12-0 | 1-20 | 18-0 | 1-2 | 18-0 |
| 30 | 1-25 | 21-5 | 1-10 | 12-0 | 1-10 | 12-0 | 1-20 | 18-0 | 1-2 | 18-0 |
| 31 | 1-25 | 21-5 | 1-10 | 12-0 | 1-10 | 12-0 | 1-20 | 18-0 | 1-2 | 18-0 |

MONTHLY DISCHARGE of Phillips Creek, near Roosville, for 1914.

(Drainage area, 23 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-----------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| May | 106 | 33 | 69-6 | 3-02 | 3-48 | 4,280 |
| June | 134 | 53 | 76-2 | 3-31 | 3-69 | 4,530 |
| July | 53 | 21-5 | 33-9 | 1-47 | 1-70 | 2,080 |
| August | 33 | 12-0 | 17-0 | 0-74 | 0-85 | 1,050 |
| September | 18 | 12-0 | 14-0 | 0-61 | 0-68 | 833 |
| October | 25 | 15-0 | 19-0 | 0-83 | 0-96 | 1,170 |
| November | 29 | ..... | 23-2 | 1-01 | 1-13 | 1,380 |

Accuracy "C."

SESSIONAL PAPER No. 25e

ROCK CREEK, NEAR ELKO (3049).

Location.—One-half mile above Rock mill, near Elko. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—Similar to Elko (see Elk river).

Gauge.—Two-foot wooden staff gauge, read four or five times a week by Mr. H. B. Stiven, of Elko.

Channel.—Smooth, with swift water. Good control.

Discharge Measurements.—Five measurements were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Results should be within 15 per cent.

General.—Rock creek is a small stream, about 15 miles long, flowing from the east into Kootenay river, about 10 miles south of Jaffray. The total drainage is about 40 square miles. The station is located above the mouth of Mud creek, and the total discharge of Rock and Mud creeks gives the discharge at Rock Creek Lumber Company's dam. The water is used for irrigation.

DISCHARGE MEASUREMENTS of Rock Creek, near Baynes, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|----------|----------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 18 | D. O'B. G., R. H. H. | 1048 | 18.5 | 40.6 | 2.06 | 1.30 | 82.8 |
| June 19 | D. O'B. G., H. B. H. | 1048 | 18.5 | 37.6 | 2.28 | 1.35 | 86.0 |
| July 12 | R. H. H. (Prov.) | | 18.5 | 29.3 | 1.78 | 0.85 | 52.1 |
| July 29 | D. O'B. G. | 1929 | 18.5 | 23.6 | 1.35 | 0.53 | 31.9 |
| Sept. 14 | H. B. H. (Prov.) | | | 20.6 | 0.87 | 0.33 | 18.1 |

6 GEORGE V, A. 1916

DAILY GAUGE HEIGHT AND DISCHARGE of Rock Creek, near Baynes, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | |
|------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1. | | 31.9 | | 76.1 | 1.15 | 73.7 | 0.5 | 28.5 | 0.35 | 19.2 |
| 2. | 0.55 | 31.9 | 1.3 | 82.9 | | 69.8 | 0.5 | 28.5 | | 19.2 |
| 3. | | 43.8 | 1.4 | 89.7 | 1.05 | 65.9 | | 27.4 | 0.35 | 19.2 |
| 4. | 0.9 | 55.7 | 1.45 | 93.1 | 1.0 | 62.5 | | 26.4 | 0.35 | 19.2 |
| 5. | 1.0 | 62.5 | | 91.4 | | 64.2 | 0.45 | 25.2 | 0.35 | 19.2 |
| 6. | 1.0 | 62.5 | 1.4 | 89.7 | 1.05 | 65.9 | | 23.6 | 0.35 | 19.2 |
| 7. | | 62.5 | | 84.6 | | 60.8 | 0.4 | 22.0 | | 19.2 |
| 8. | 1.0 | 62.5 | 1.25 | 79.5 | 0.90 | 55.7 | 0.45 | 25.2 | 0.35 | 19.2 |
| 9. | | 63.3 | | 79.5 | | 55.7 | | 25.2 | | 19.2 |
| 10. | | 64.1 | 1.25 | 79.5 | 0.90 | 55.7 | 0.45 | 25.2 | 0.35 | 19.2 |
| 11. | | 64.9 | 1.35 | 79.5 | 0.85 | 52.3 | | 25.2 | | 19.2 |
| 12. | 1.05 | 65.9 | 1.2 | 76.1 | 0.85 | 52.3 | 0.45 | 25.2 | 0.35 | 19.2 |
| 13. | 1.15 | 73.7 | 1.15 | 73.7 | | 48.9 | | 23.6 | 0.30 | 16.4 |
| 14. | 1.15 | 73.7 | 1.15 | 73.7 | 0.75 | 45.5 | 0.4 | 22.0 | | 17.8 |
| 15. | 1.25 | 79.5 | | 76.6 | | 45.5 | 0.4 | 22.0 | 0.35 | 19.2 |
| 16. | 1.25 | 79.5 | 1.25 | 79.5 | 0.75 | 45.5 | 0.4 | 22.0 | | 19.2 |
| 17. | 1.3 | 82.9 | 1.3 | 82.9 | | 43.8 | | 22.0 | 0.35 | 19.2 |
| 18. | 1.3 | 82.9 | | 86.3 | 0.70 | 42.1 | 0.4 | 22.0 | | 19.2 |
| 19. | 1.3 | 82.9 | 1.4 | 89.7 | | 40.4 | | 22.0 | 0.35 | 19.2 |
| 20. | 1.35 | 86.3 | 1.35 | 86.3 | 0.65 | 38.7 | 0.4 | 22.0 | 0.35 | 19.2 |
| 21. | | 84.6 | | 108.6 | | 38.7 | | 20.6 | 0.35 | 19.2 |
| 22. | 1.3 | 82.9 | 2.0 | 131.0 | 0.65 | 38.7 | 0.35 | 19.2 | | 20.6 |
| 23. | | 82.9 | | 129.0 | | 37.0 | | 19.2 | 0.40 | 22.0 |
| 24. | 1.3 | 82.9 | 1.95 | 128.0 | 0.6 | 35.3 | 0.35 | 19.2 | | 22.0 |
| 25. | | 82.9 | | 128.0 | 0.6 | 35.3 | | 19.2 | 0.40 | 22.0 |
| 26. | 1.3 | 82.9 | 1.95 | 128.0 | 0.6 | 35.3 | 0.35 | 19.2 | 0.40 | 22.0 |
| 27. | | 81.2 | 1.9 | 124.0 | | 33.6 | | 19.2 | 0.45 | 25.2 |
| 28. | 1.25 | 79.5 | 1.25 | 79.5 | 0.55 | 31.9 | 0.35 | 19.2 | 0.45 | 25.2 |
| 29. | | 81.2 | | 76.6 | | 31.9 | 0.35 | 19.2 | | 25.2 |
| 30. | 1.3 | 82.9 | 1.15 | 73.7 | 0.55 | 31.9 | | 19.2 | 0.45 | 25.2 |
| 31. | 1.1 | 69.3 | | | 0.5 | 28.5 | | 19.2 | | |

MONTHLY DISCHARGE of Rock Creek, near Baynes, for 1914.

(Drainage area, 15 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | Accuracy. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Menn. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| | | | | | | | |
| May..... | 86.3 | 31.9 | 71.2 | 4.75 | 5.40 | 4,380 | C |
| June..... | 131.0 | 73.7 | 91.9 | 6.12 | 6.83 | 5,470 | D |
| July..... | 73.7 | 28.5 | 47.2 | 3.15 | 3.63 | 2,900 | C |
| August..... | 28.5 | 19.2 | 22.5 | 1.50 | 1.73 | 1,380 | B |
| September..... | 25.2 | 16.4 | 20.3 | 1.35 | 1.51 | 1,210 | B |

SESSIONAL PAPER No. 25e

BIG SAND CREEK, NEAR JAFFRAY (3042).

Location.—About 300 yards below highway and C.P.R. bridges, 2 miles from Galloway, near Jaffray. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—Summers, hot and dry. Winters severe, as low as -40° F. some seasons, with light snowfall. For further information see Elk river. The conditions at Elko are very similar.

Gauge.—Five-foot wooden staff gauge, read daily by Mr. N. Craigie.

Channel.—Uniform and smooth, with swift water. Good control.

Discharge Measurements.—Five well-distributed measurements were made in 1914.

Co-operation.—This station was established by Mr. H. B. Hicks, Provincial Water Rights Branch, and maintained co-operatively by him and the British Columbia Hydrographic Survey.

Accuracy.—Mr. Hicks made a splendid section, late in 1913. The measurements are reliable, daily gauge readings were taken, and the gauge-height-discharge curve is good. The results should be within 5 per cent.

General.—Big Sand creek is an irrigation stream, about 20 miles long, flowing from the northeast into Kootenay river, south of Jaffray. The gauging station is about 8 miles from the mouth, and above the station the drainage area is about 40 square miles. As before stated, the water is used for irrigation.

DISCHARGE MEASUREMENTS of Big Sand Creek, near Jaffray, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|---------------|---------------------------|-----------|--------|------------------|----------------|---------------|------------|
| 1914. | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| May. 19. | D. O'B. G., R. H. H. | 1048 | 38 | 93.8 | 5.44 | 2.3 | 511 |
| June 19. | D. O'B. G., H. B. H. | 1048 | 38 | 81.5 | 4.53 | 2.0 | 369 |
| July 9. | R. H. H. (Prov.) ..... | ..... | 36 | 51.2 | 2.64 | 1.20 | 135 |
| July 29. | D. O'B. G., R. H. H. | 1929 | 35 | 28.4 | 1.65 | 0.65 | 47.1 |
| Sept. 9. | H. B. H. (Prov.) ..... | ..... | ..... | 19.9 | 1.10 | 0.35 | 21.9 |

DAILY GAUGE HEIGHT AND DISCHARGE of Big Sand Creek, near Hanbury, for 1914.

| DAY. | May. | | June. | | July. | | August. | | September. | | |
|------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|------|
| | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge | Gauge Height. | Discharge. | |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | |
| 1 | | 615 | 2-1 | 415 | 1-5 | 205 | 0-58 | 40-2 | 0-18 | 9-0 | |
| 2 | | 615 | 2-35 | 335 | 1-6 | 233 | 0-55 | 37-5 | 0-19 | 9-5 | |
| 3 | | 2-5 | 615 | 2-5 | 615 | 1-55 | 219 | 0-52 | 34-8 | 0-16 | 8-0 |
| 4 | | 2-35 | 535 | 2-45 | 588 | 1-45 | 191 | 0-50 | 33-0 | 0-18 | 9-0 |
| 5 | | 1-95 | 355 | 2-3 | 510 | 1-4 | 177 | 0-47 | 30-6 | 0-18 | 9-0 |
| 6 | | 1-75 | 282 | 2-15 | 438 | 1-4 | 177 | 0-47 | 30-6 | 0-16 | 8-0 |
| 7 | | 1-95 | 355 | 1-85 | 316 | 1-35 | 166 | 0-45 | 29-0 | 0-18 | 9-0 |
| 8 | | 2-2 | 460 | 1-75 | 282 | 1-3 | 155 | 0-45 | 29-0 | 0-22 | 11-4 |
| 9 | | 2-35 | 535 | 1-65 | 249 | 1-2 | 133 | 0-42 | 26-6 | 0-28 | 15-6 |
| 10 | | 2-4 | 560 | 1-5 | 205 | 1-1 | 113 | 0-42 | 26-6 | 0-25 | 13-5 |
| 11 | | 2-35 | 535 | 1-65 | 249 | 1-0 | 95 | 0-4 | 25-0 | 0-28 | 15-6 |
| 12 | | 2-25 | 485 | 1-65 | 249 | 1-0 | 95 | 0-4 | 25-0 | 0-25 | 13-5 |
| 13 | | 2-15 | 438 | 1-85 | 316 | 0-95 | 87-5 | 0-37 | 22-6 | 0-25 | 13-5 |
| 14 | | 2-35 | 535 | 2-15 | 438 | 1-05 | 103 | 0-37 | 22-6 | 0-20 | 10-0 |
| 15 | | 2-55 | 642 | 2-15 | 438 | 1-05 | 103 | 0-35 | 21-0 | 0-22 | 11-4 |
| 16 | | 2-7 | 730 | 2-15 | 438 | 1-0 | 95 | 0-35 | 21-0 | 0-30 | 17-0 |
| 17 | | 2-6 | 670 | 2-15 | 438 | 0-9 | 80 | 0-32 | 18-6 | 0-41 | 25-8 |
| 18 | | 2-55 | 642 | 2-2 | 460 | 0-9 | 80 | 0-37 | 22-6 | 0-61 | 43-3 |
| 19 | | 2-5 | 615 | 2-1 | 415 | 0-96 | 89 | 0-37 | 22-6 | 0-88 | 77-4 |
| 20 | | 2-4 | 560 | 2-05 | 395 | 0-91 | 81-5 | 0-37 | 22-6 | 1-02 | 98-6 |
| 21 | | 2-4 | 560 | 1-85 | 316 | 0-83 | 70-9 | 0-35 | 21-0 | 0-90 | 80-0 |
| 22 | | 2-5 | 615 | 1-75 | 282 | 0-8 | 67-0 | 0-35 | 21-0 | 0-88 | 77-4 |
| 23 | | 2-4 | 560 | 1-65 | 249 | 0-78 | 64-6 | 0-35 | 21-0 | 0-80 | 67-0 |
| 24 | | 2-35 | 535 | 1-4 | 177 | 0-75 | 61-0 | 0-30 | 17-0 | 0-80 | 67-0 |
| 25 | | 2-15 | 438 | 1-5 | 205 | 0-72 | 57-4 | 0-28 | 15-6 | 0-76 | 62-2 |
| 26 | | 2-2 | 460 | 1-65 | 249 | 0-70 | 55-0 | 0-25 | 13-5 | 0-70 | 55-0 |
| 27 | | 2-15 | 438 | 1-65 | 249 | 0-67 | 51-1 | 0-24 | 12-8 | 0-70 | 55-0 |
| 28 | | 2-0 | 375 | 1-6 | 233 | 0-65 | 48-5 | 0-25 | 13-5 | 0-65 | 48-5 |
| 29 | | 1-75 | 282 | 1-65 | 249 | 0-62 | 44-6 | 0-22 | 11-4 | 0-60 | 42-0 |
| 30 | | 1-75 | 282 | 1-65 | 249 | 0-61 | 43-3 | 0-25 | 13-5 | 0-60 | 42-0 |
| 31 | | 2-0 | 375 | | | 0-6 | 42-0 | 0-19 | 9-5 | | |

MONTHLY DISCHARGE of Big Sand Creek, near Hanbury, for 1914.

(Drainage area 40 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|-------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| | | | | | | |
| May.. | 730 | 282 | 506 | 12-7 | 14-6 | 31,100 |
| June | 615 | 177 | 348 | 8-7 | 9-71 | 20,700 |
| July | 233 | 42 | 106 | 2-65 | 3-06 | 6,520 |
| August... | 40-2 | 9-5 | 22-9 | 0-57 | 0-66 | 1,410 |
| September.. | 98-5 | 8-0 | 34-1 | 0-85 | 0-95 | 2,030 |

Accuracy A.

LITTLE SAND CREEK, NEAR JAFFRAY (3043).

Location.—At small bridge, above Rosen's ranch, near Jaffray. Cranbrook district.

Records Available.—May to September, 1914.

Climatic Conditions.—See Big Sand creek.

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Gauge.—Wooden staff gauge, nailed to the bridge, read daily by Andrew Rosen of Jaffray.

Channel.—Uniform. Water unbroken and swift. Control doubtful.

Discharge Measurements.—Five were made in 1914.

Co-operation.—Provincial Water Rights Branch and British Columbia Hydrographic Survey co-operated in 1914.

Accuracy.—Results should be within 15 per cent.

General.—Little Sand creek, a tributary of Big Sand creek, is a small stream used extensively for irrigation.

DISCHARGE MEASUREMENTS of Little Sand Creek, near Jaffray, for 1914.

| Date. | Hydrographer. | Meter No. | Width. | Area of Section. | Mean Velocity. | Gauge Height. | Discharge. |
|-------------------|-------------------------------|-----------|--------|------------------|----------------|---------------|------------|
| | | | Feet. | Sq. ft. | Ft. per sec. | Feet. | Sec.-ft. |
| 1914. | | | | | | | |
| May 15 | D. O. B. G., R. H. H. | 1048 | 24.0 | 31.7 | 3.51 | 1.333 | 111 |
| June 19 | D. O. B. G., H. B. H. | 1048 | 24.0 | 26.7 | 3.01 | 1.000 | 80.3 |
| July 13 | R. H. H. (Prov.) | | 24.0 | 26.9 | 3.05 | 0.875 | 82.0 |
| July 29 | D. O. B. G., R. H. H. | 1929 | 24.0 | 14.7 | 2.04 | 0.458 | 30.0 |
| Sept 14 | H. B. H. (Prov.) | | | 17.2 | 2.11 | 0.562 | 36.3 |

DAILY GAUGE HEIGHT AND DISCHARGE of Little Sand Creek, near Jaffray, for 1914.

| Day. | April. | | May. | | June. | |
|------|--------------|-----------|--------------|-----------|--------------|-----------|
| | Gauge Height | Discharge | Gauge Height | Discharge | Gauge Height | Discharge |
| | Feet. | Sq. ft. | Feet | Sec.-ft. | Feet | Sec.-ft. |
| 1 | | | 1.0 | 85.0 | 1.04 | 90.0 |
| 2 | | | 0.95 | 79.0 | 1.29 | 120.0 |
| 3 | | | 1.05 | 91.0 | 1.4 | 133.0 |
| 4 | | | 0.95 | 79.0 | 1.46 | 141.0 |
| 5 | | | 0.9 | 73.2 | 1.46 | 141.0 |
| 6 | | | 0.95 | 79.0 | 1.42 | 136.0 |
| 7 | | | 1.1 | 97.0 | 1.25 | 115.0 |
| 8 | | | 0.85 | 68.2 | 1.17 | 105.0 |
| 9 | | | 1.2 | 109.0 | 1.08 | 95.0 |
| 10 | | | 1.1 | 97.0 | 0.94 | 77.5 |
| 11 | | | 1.12 | 99.0 | 1.12 | 99.0 |
| 12 | | | 1.12 | 99.0 | 1.17 | 105.0 |
| 13 | | | 1.17 | 105.0 | 1.0 | 85.0 |
| 14 | | | 1.25 | 118.0 | 0.96 | 80.0 |
| 15 | | | 1.35 | 127.0 | 1.06 | 92.5 |
| 16 | | | 1.06 | 141.0 | 1.0 | 85.0 |
| 17 | | | 1.35 | 127.0 | 1.14 | 102.0 |
| 18 | | | 1.46 | 141.0 | 0.96 | 80.0 |
| 19 | | | 1.5 | 147.0 | 0.87 | 69.6 |
| 20 | | | 1.5 | 147.0 | 1.02 | 87.5 |
| 21 | | | 1.44 | 148.0 | 0.85 | 68.2 |
| 22 | | | 1.44 | 138.0 | 0.79 | 61.5 |
| 23 | | | 1.29 | 120.0 | 0.77 | 59.2 |
| 24 | | | 1.27 | 117.0 | 0.85 | 68.2 |
| 25 | | | 1.31 | 122.0 | 0.92 | 75.9 |
| 26 | 0.8 | 62.4 | 1.37 | 129.0 | 1.0 | 85.0 |
| 27 | 0.81 | 60.0 | 1.2 | 109.0 | 1.06 | 92.5 |
| 28 | 0.85 | 68.2 | 1.12 | 99.0 | 0.85 | 68.2 |
| 29 | 0.85 | 68.2 | 1.04 | 90.0 | 0.79 | 61.5 |
| 30 | 0.92 | 75.0 | 1.12 | 99.0 | 0.77 | 59.2 |
| 31 | | | 0.96 | 80.0 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of Little Sand Creek, near Jaffray, for 1914—Concluded.

| DAY. | July. | | August. | | September. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 0-637 | 50-3 | 0-645 | 46-1 | 0-312 | 19-7 |
| 2..... | 0-666 | 48-3 | 0-416 | 26-3 | 0-312 | 19-7 |
| 3..... | 0-812 | 63-7 | 0-437 | 27-8 | 0-532 | 37-0 |
| 4..... | 0-687 | 50-3 | 0-645 | 46-1 | 0-604 | 42-1 |
| 5..... | 0-604 | 42-1 | 0-572 | 39-2 | 0-308 | 19-5 |
| 6..... | 0-791 | 61-5 | 0-416 | 26-3 | 0-283 | 18-3 |
| 7..... | 0-625 | 44-1 | 0-398 | 24-7 | 0-301 | 19-1 |
| 8..... | 0-625 | 44-1 | 0-398 | 24-7 | 0-593 | 40-9 |
| 9..... | 0-625 | 44-1 | 0-398 | 24-7 | 0-791 | 61-5 |
| 10..... | 0-582 | 38-1 | 0-604 | 42-1 | 0-687 | 50-3 |
| 11..... | 0-250 | 34-2 | 0-583 | 40-1 | 0-520 | 34-2 |
| 12..... | 0-500 | 32-5 | 0-604 | 42-1 | 0-666 | 48-3 |
| 13..... | 0-708 | 52-5 | 0-583 | 40-1 | 0-687 | 50-3 |
| 14..... | 0-520 | 34-2 | 0-534 | 37-3 | 0-479 | 30-8 |
| 15..... | 0-509 | 32-5 | 0-562 | 38-1 | 0-520 | 34-2 |
| 16..... | 0-514 | 33-3 | 0-416 | 26-3 | 0-479 | 30-8 |
| 17..... | 0-479 | 30-8 | 0-395 | 24-7 | 0-544 | 36-1 |
| 18..... | 0-489 | 31-6 | 0-437 | 27-8 | 0-520 | 34-2 |
| 19..... | 0-479 | 30-8 | 0-562 | 38-1 | 0-479 | 30-8 |
| 20..... | 0-625 | 44-1 | 0-510 | 33-4 | 0-500 | 33-2 |
| 21..... | 0-625 | 44-1 | 0-363 | 22-4 | 0-401 | 25-3 |
| 22..... | 0-439 | 30-8 | 0-364 | 22-6 | 0-416 | 26-3 |
| 23..... | 0-437 | 27-8 | 0-333 | 20-7 | 0-395 | 24-7 |
| 24..... | 0-437 | 27-8 | 0-348 | 21-2 | 0-354 | 21-9 |
| 25..... | 0-437 | 27-8 | 0-333 | 20-7 | 0-416 | 26-3 |
| 26..... | 0-416 | 26-3 | 0-333 | 20-7 | 0-437 | 27-8 |
| 27..... | 0-604 | 42-1 | 0-372 | 20-2 | 0-437 | 27-8 |
| 28..... | 0-437 | 27-8 | 0-312 | 19-7 | 0-408 | 25-6 |
| 29..... | 0-416 | 26-3 | 0-312 | 19-7 | 0-408 | 25-6 |
| 30..... | 0-458 | 29-3 | 0-312 | 19-7 | 0-384 | 23-8 |
| 31..... | 0-770 | 59-2 | 0-312 | 19-7 | ..... | ..... |

MONTHLY DISCHARGE of Little Sand Creek, near Jaffray, for 1914.

(Drainage area 33 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. |
| May..... | 147 | 68-2 | 108 | 3-28 | 3-78 | 6,640 |
| June..... | 141 | 59-2 | 91-3 | 2-77 | 3-09 | 5,430 |
| July..... | 63-7 | 26-3 | 39-1 | 1-18 | 1-36 | 2,400 |
| August..... | 46-1 | 19-7 | 29-1 | 0-88 | 1-01 | 1,700 |
| September..... | 61-5 | 18-3 | 31-5 | 0-95 | 1-06 | 1,870 |

Accuracy "C."

ST. MARY'S RIVER, NEAR WYCLIFFE (3050).

Location.—At traffic bridge near Wycliffe, 12 miles from the mouth and 7 miles from Cranbrook. Cranbrook district.

Records Available.—April to December, 1914.

Climatic Conditions.—Climatic conditions near Wycliffe are very similar to those at Cranbrook. At Cranbrook, from December 1, 1913, to November

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30, 1914, the precipitation was 16 inches. The summers are hot, windy and dusty, almost semi-arid. The winters are severe, with occasional cold spells a week or so duration, when the temperature may go as low as -40°F or -50°F . In December, 1914, engineers of the British Columbia Hydrographic Survey were doing field work around Cranbrook when the temperature was as low as -20°F . St. Mary's river freezes up in November or December and remains frozen till March. Frazil ice is prevalent.

Gauge.—Vertical staff gauge, read daily by the Otis Staples Lumber Company at Wycliffe.

Channel.—Straight, uniform, with smooth, swift water. Good control.

Discharge Measurements.—Mr. Hicks, District Engineer, Provincial Water Rights Branch, made several measurements in 1913, and in 1914 four measurements were made.

Accuracy.—Combining Mr. Hick's measurements and the 1914 measurements a very good gauge-height discharge curve has been obtained. The results should be within 10 per cent.

General.—The St. Mary's is a large river rising in the divide between Kootenay lake and Kootenay river in East Kootenay. It flows in an easterly direction, discharging into Kootenay river near Fort Steele, 50 miles above the international boundary line. It is about 50 miles long and drains in the neighbourhood of 1,100 square miles.

The St. Mary's river is at present used for logging purposes. The Otis Staples Lumber Company has a large mill at Wycliffe, and logs are driven from the timber limits near the source of the river to Wycliffe. Ore, particularly silver-lead and zinc, is found in large quantities in various parts of the drainage. The Sullivan mine, at Kimberley, had an output in 1914 of 36,000 tons, from which was obtained 550,000 ounces of silver and 25,000,000 pounds of lead. Power is obtained from Mark creek, a tributary of the St. Mary's.

On St. Mary's river there is a power site immediately above the gauging station near Wycliffe. A head of from 30 to 40 feet may be obtained, and a development of about 2,000 horse power may be installed at a fairly reasonable figure.

DISCHARGE MEASUREMENTS of St. Mary's River at Wycliffe, for 1914.

| Date. | Hydrographer. | Meter No | Width. | Area of Section | Mean Velocity | Gauge Height. | Discharge |
|----------------|---------------|----------|--------|-----------------|---------------|---------------|-----------|
| 1914. | | | Feet | Sq ft | Ft per sec | Feet | Sec ft. |
| June 30. . . . | D. O. B. G. | 1,048 | 41 | 1,110 | 6.83 | 5.90 | 7,561 |
| July 23. . . . | " | 1,929 | 162 | 708 | 1.45 | 8.61 | 2,480 |
| Oct. 10. . . . | H. B. H. | 1,999 | 148 | 434 | 1.95 | 1.9 | 878 |
| Oct. 16. . . . | " | 1,929 | 148 | 452 | 1.91 | 1.9 | 877 |

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DAILY GAUGE HEIGHT AND DISCHARGE of St. Mary's River near Wycliffe,
for 1914.

| DAY. | April. | | May. | | June. | |
|------|---------------|------------|---------------|------------|---------------|------------|
| | Gauge Height. | Discharge. | Gauge Height. | Discharge. | Gauge Height. | Discharge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1 | 1-0 | 395 | 3-6 | 2,460 | 6-25 | 8,720 |
| 2 | 1-0 | 395 | 4-5 | 3,910 | 6-85 | 11,000 |
| 3 | 1-0 | 395 | 5-45 | 6,210 | 8-2 | 17,100 |
| 4 | 1-0 | 395 | 5-4 | 6,070 | 8-2 | 17,100 |
| 5 | 1-16 | 441 | 4-9 | 4,790 | 7-6 | 14,300 |
| 6 | 1-22 | 466 | 4-4 | 3,710 | 7-1 | 12,000 |
| 7 | 1-32 | 506 | 4-9 | 4,790 | 6-25 | 8,720 |
| 8 | 1-4 | 541 | 3-45 | 2,280 | 5-10 | 5,280 |
| 9 | 1-55 | 617 | 3-4 | 2,220 | 4-95 | 4,910 |
| 10 | 1-65 | 674 | 3-7 | 2,590 | 4-90 | 4,790 |
| 11 | 1-95 | 873 | 4-15 | 3,260 | 5-00 | 5,030 |
| 12 | 2-00 | 910 | 4-7 | 4,340 | 5-35 | 5,940 |
| 13 | 2-15 | 1,030 | 5-05 | 5,160 | 5-65 | 6,790 |
| 14 | 2-45 | 1,270 | 5-15 | 5,410 | 6-36 | 9,060 |
| 15 | 3-05 | 1,840 | 6-1 | 8,200 | 7-0 | 11,600 |
| 16 | 3-25 | 2,060 | 6-3 | 8,890 | 7-2 | 12,500 |
| 17 | 3-30 | 2,110 | 6-4 | 9,240 | 7-35 | 13,100 |
| 18 | 3-40 | 2,220 | 6-3 | 8,890 | 7-55 | 14,000 |
| 19 | 3-4 | 2,220 | 6-0 | 7,870 | 7-6 | 14,300 |
| 20 | 3-45 | 2,280 | 5-9 | 7,550 | 7-55 | 14,000 |
| 21 | 3-6 | 2,460 | 5-9 | 7,550 | 7-15 | 12,200 |
| 22 | 3-6 | 2,460 | 5-8 | 7,230 | 6-25 | 8,720 |
| 23 | 3-5 | 2,340 | 5-7 | 6,940 | 5-5 | 6,350 |
| 24 | 3-5 | 2,340 | 5-7 | 6,940 | 5-1 | 5,280 |
| 25 | 3-5 | 2,340 | 5-5 | 6,350 | 5-1 | 5,280 |
| 26 | 3-4 | 2,220 | 5-4 | 6,070 | 5-6 | 6,640 |
| 27 | 3-4 | 2,220 | 5-4 | 6,070 | 6-0 | 7,870 |
| 28 | 3-3 | 2,110 | 5-2 | 5,540 | 6-25 | 8,720 |
| 29 | 3-2 | 2,000 | 5-2 | 5,540 | 6-05 | 8,040 |
| 30 | 3-1 | 1,890 | 5-0 | 5,030 | 5-8 | 7,240 |
| 31 | | | 5-6 | 6,640 | | |

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DAILY GAUGE HEIGHT AND DISCHARGE of St. Mary's River near Wycliffe, for 1914.

| DAY. | July. | | August. | | September. | | October. | | November. | | December. | |
|---------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. | Gauge Height. | Dis-charge. |
| | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. | Feet. | Sec.-ft. |
| 1..... | 5-82 | 7,300 | 2-8 | 1,590 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 2..... | 6-22 | 8,610 | 2-8 | 1,590 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 3..... | 6-65 | 10,200 | 2-7 | 1,500 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 4..... | 7-0 | 11,600 | 2-6 | 1,400 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 5..... | 7-0 | 11,600 | 2-6 | 1,400 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 6..... | 6-7 | 10,400 | 2-5 | 1,310 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 7..... | 6-2 | 8,890 | 2-5 | 1,310 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 8..... | 5-9 | 7,550 | 2-4 | 1,230 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 9..... | 5-6 | 6,646 | 2-4 | 1,230 | 1-8 | 767 | 1-5 | 590 | 2-0 | 910 | 2-0 | 910 |
| 10..... | 5-5 | 6,356 | 2-3 | 1,150 | 1-8 | 767 | 1-6 | 644 | 2-0 | 910 | 2-0 | 910 |
| 11..... | 5-35 | 5,940 | 2-2 | 1,070 | 1-8 | 767 | 1-6 | 644 | 2-0 | 910 | 2-0 | 910 |
| 12..... | 5-4 | 6,070 | 2-2 | 1,070 | 1-8 | 767 | 1-6 | 644 | 2-0 | 910 | 2-0 | 910 |
| 13..... | 5-5 | 6,350 | 2-1 | 990 | 1-8 | 767 | 1-6 | 644 | 2-0 | 910 | 2-0 | 910 |
| 14..... | 5-5 | 6,350 | 2-1 | 990 | 1-8 | 787 | 1-7 | 703 | 2-0 | 910 | 2-0 | 910 |
| 15..... | 5-4 | 6,075 | 2-1 | 990 | 1-8 | 767 | 1-7 | 703 | 2-0 | 910 | 2-0 | 910 |
| 16..... | 5-0 | 5,090 | 2-1 | 990 | 1-8 | 767 | 1-7 | 703 | 2-0 | 910 | 2-0 | 910 |
| 17..... | 4-7 | 4,340 | 2-1 | 990 | 1-8 | 767 | 1-8 | 767 | 2-0 | 910 | 2-0 | 910 |
| 18..... | 4-5 | 3,910 | 2-0 | 910 | 1-8 | 767 | 1-8 | 767 | 2-0 | 910 | 2-0 | 910 |
| 19..... | 4-25 | 3,430 | 2-0 | 910 | 1-8 | 767 | 1-8 | 767 | 2-0 | 910 | 2-0 | 910 |
| 20..... | 3-95 | 2,940 | 2-0 | 910 | 1-8 | 767 | 1-8 | 767 | 2-0 | 910 | 2-0 | 910 |
| 21..... | 3-75 | 2,660 | 2-0 | 910 | 1-8 | 767 | 1-8 | 767 | 2-0 | 910 | 2-0 | 910 |
| 22..... | 3-55 | 2,490 | 2-0 | 910 | 1-8 | 767 | 1-8 | 767 | 2-0 | 910 | 2-0 | 910 |
| 23..... | 3-4 | 2,220 | 1-9 | 836 | 1-8 | 767 | 1-8 | 767 | 2-0 | 910 | 2-0 | 910 |
| 24..... | 3-25 | 2,060 | 1-9 | 836 | 1-8 | 767 | 1-9 | 836 | 2-0 | 910 | 2-0 | 910 |
| 25..... | 3-2 | 2,000 | 1-9 | 836 | 1-8 | 767 | 1-9 | 836 | 2-0 | 910 | 2-0 | 910 |
| 26..... | 3-1 | 1,890 | 1-9 | 836 | 1-8 | 767 | 1-9 | 836 | 2-0 | 910 | 2-0 | 910 |
| 27..... | 3-1 | 1,890 | 1-8 | 767 | 1-8 | 767 | 1-9 | 836 | 2-0 | 910 | 2-0 | 910 |
| 28..... | 3-0 | 1,780 | 1-8 | 767 | 1-8 | 767 | 1-9 | 836 | 2-0 | 910 | 2-0 | 910 |
| 29..... | 3-0 | 1,780 | 1-8 | 767 | 1-8 | 767 | 1-9 | 836 | 2-0 | 910 | 2-0 | 910 |
| 30..... | 2-9 | 1,680 | 1-8 | 767 | 1-8 | 767 | 1-9 | 836 | 2-0 | 910 | 2-0 | 910 |
| 31..... | 2-8 | 1,590 | 1-8 | 767 | 1-0 | ..... | 1-9 | 836 | ..... | ..... | 2-2 | ..... |

MONTHLY DISCHARGE of St. Marys River near Wycliffe for 1914.

(Drainage area, 1,100 square miles.)

| MONTH. | DISCHARGE IN SECOND-FEET. | | | | RUN-OFF. | | ACCURACY. |
|----------------|---------------------------|----------|-------|------------------|-----------------------------------|---------------------|-----------|
| | Maximum. | Minimum. | Mean. | Per square mile. | Depth in inches on Drainage area. | Total in acre-feet. | |
| April..... | 2,460 | 395 | 1,470 | 1-31 | 1-50 | 87,500 | R |
| May..... | 9,240 | 2,220 | 5,530 | 5-05 | 5-82 | 340,000 | R |
| June..... | 17,100 | 7,340 | 9,550 | 8-68 | 9-68 | 568,000 | R |
| July..... | 11,600 | 1,590 | 5,420 | 4-93 | 5-68 | 333,000 | R |
| August..... | 1,590 | 767 | 1,050 | 0-95 | 1-10 | 64,600 | R |
| September..... | 767 | 767 | 767 | 0-70 | 0-78 | 45,600 | D |
| October..... | 836 | 590 | 711 | 0-65 | 0-75 | 43,700 | D |
| November..... | 910 | 910 | 910 | 0-83 | 0-93 | 54,100 | ..... |

MISCELLANEOUS METERING STATIONS.

| Date. | Stream. | Locality. | Gauge Height. | Discharge. |
|---------------|------------------------|-----------------|---------------|------------|
| | | | Feet. | Sec.-ft. |
| 1913. | | | | |
| Sept. 20..... | Washout Creek..... | Galena..... | 0-72 | 12-9 |
| 1914. | | | | |
| May 26..... | Washout Creek..... | Galena..... | 1-50 | 45-0 |
| June 21..... | "..... | "..... | 1-65 | 55-8 |
| Aug. 24..... | "..... | "..... | 1-02 | 13-4 |
| Oct. 7..... | "..... | "..... | 1-10 | 12-2 |
| April 17..... | Shuswap Creek..... | Athalmer..... | 0-59 | 11-09 |
| May 23..... | "..... | "..... | 1-30 | 48-62 |
| July 28..... | "..... | "..... | 1-15 | 20-90 |
| Aug. 25..... | "..... | "..... | 1-00 | 16-70 |
| Sept. 21..... | "..... | "..... | 1-00 | 17-15 |
| " 28..... | "..... | "..... | 1-00 | 15-25 |
| May 27..... | Lewis Creek..... | Wasa..... | 0-55 | 17-5 |
| July 16..... | "..... | "..... | 0-65 | 17-5 |
| Aug. 12..... | "..... | "..... | "..... | 7-08 |
| Sept. 26..... | "..... | "..... | 0-40 | 4-92 |
| May 15..... | Little Bull..... | Bull River..... | 1-05 | 7-83 |
| Aug. 4..... | "..... | "..... | 1-30 | 14-3 |
| Sept. 9..... | "..... | "..... | 1-26 | 12-9 |
| July 7..... | Moyie River..... | Kingsgate..... | 2-1 | 1,140- |
| Aug. 1..... | "..... | "..... | 0-80 | 333-0 |
| Oct. 15..... | "..... | "..... | 1-10 | 183-0 |
| " 15..... | "..... | "..... | 0-80 | 225-0 |
| " 8..... | "..... | "..... | 0-75 | 213-0 |
| Aug. 14..... | Sheep Creek..... | Wasa..... | 11-25 | 91-8 |
| Sept. 28..... | "..... | "..... | 11-00 | 97-0 |
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| Date. | Stream. | Tributary to-- | Locality. | Gauge Height. | Discharge. |
|---------------|---------------------|----------------|----------------|---------------|------------|
| | | | | Feet. | Sec.-ft. |
| Nov. 27..... | Duncan River..... | Howser..... | Howser..... | 1-80 | 1,250 |
| " 29..... | Fry Creek..... | "..... | Kaslo..... | 2-1 | 278 |
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| " 10..... | Kootenay River..... | "..... | Taghum..... | "..... | 27,300 |
| Dec. 8..... | "..... | "..... | "..... | "..... | 23,400 |
| Nov. 28..... | Lardeau River..... | "..... | Howser..... | "..... | 1,130 |
| April 18..... | Wilson Creek..... | "..... | Roseberry..... | 1-85 | 822 |
| May 14..... | "..... | "..... | "..... | 3-48 | 2,290 |
| June 15..... | "..... | "..... | "..... | 3-80 | 3,320 |
| " 18..... | "..... | "..... | "..... | 4-00 | 2,480 |
| July 8..... | "..... | "..... | "..... | 2-50 | 2,340 |
| Aug. 17..... | "..... | "..... | "..... | 0-85 | 642 |
| Nov. 3..... | "..... | "..... | "..... | 0-90 | 759 |

| Date. | Stream. | Locality. | Gauge Height. | Discharge. |
|--------------|---------------------|--------------------|---------------|------------|
| | | | Feet. | Sec.-ft. |
| 1914. | | | | |
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| June 12..... | "..... | "..... | 5-20 | 66-1 |
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